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FOREIGN MILITARY REVIEW

Guarding Peace and Socialism

18010301a Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 1, Jan 88 (signed to press 7 Jan 88) pp 3-8

[Unattributed article under the rubric "As We Near the 70th Anniversary of the Soviet Army and Navy": "Guarding Peace and Socialism"]

[Text] Our Motherland is celebrating the glorious 70th anniversary of the Soviet Army and Navy in a spirit of active endeavor to achieve implementation of the historical decisions of the 27th Congress of the Party of Lenin and of subsequent CC CPSU plenums. The restructuring process—revolutionary in its essence—can be seen everywhere, its purpose to accelerate the social and economic development of the country. The party has confidently charted a course towards restoration, achievement of a qualitatively new level of Soviet society.

Realization of the grandiose goals of Communism, however, is being effected in a complex international environment, a dangerous and alarming state of affairs for which the imperialists are responsible. The situation demands a high degree of political vigilance on the part of the Soviet people with respect to the intrigues of aggressive reactionary forces, their reliable safeguarding and defense of the great achievements of socialism.

Under conditions in which international reactionism is stirring up the arms race, promoting policies of social revenge and "crusades" against socialism, the CPSU and Soviet government must do whatever is necessary to maintain the defensive might of our state at the required level. As Comrade M. S. Gorbachev stressed, "we will spare no effort from this point onward to insure that the armed forces of the USSR have everything necessary to reliably protect our Fatherland and its allies, to insure that no one can catch us unawares." The Communist Party of the Soviet Union is proceeding from the fact that the greatest possible enhancement of combat readiness in our armed forces and the education of servicemen in our army and navy, and of all the Soviet people in the spirit of heightened vigilance and continued readiness to protect the great gains of socialism must, as before, constitute the most important tasks of our party, state and people.

V. I. Lenin proved scientifically, and practical experience has confirmed, that defense of our revolutionary gains from the encroachments of class enemies comprises a general normality of socialism. "A revolution only has worth," he stressed, "when it can be defended..." (Complete Works of Lenin, vol 37, p 122). While a threat remains to the gains of socialism, "our steps towards peace must be accompanied by the force of total military readiness..." (Complete Works, vol 40, p 248). The Communist Party and the Soviet people have been steadily guided by these Leninist precepts of utmost importance throughout the entire history of the development of our state and its armed forces.

Under the difficult conditions of civil war and foreign intervention, the young Soviet republic was able to successfully accomplish the complex and extremely crucial task of building combat-ready, regular armed forces of a new, socialist variety. For the first time in world history, their activity was directed not against the people, but in their defense. Under the leadership and direction of the Bolshevik Party and with the active support of the huge masses of the working class, the Red Army passed its first combat test with honor, crushing the imperialist interventionists and White Guards. The victory they secured was a victory of the great ideas of socialist revolution, of the forces of progress and peace over those of reaction and war. It clearly demonstrated the invincible might of the Soviet state, the power of the military organization of the conquering proletariat.

Having repulsed the initial onslaught of world imperialism, our people took up the battle for restoration of a national economy destroyed by war and set about the accomplishment of grandiose, creative tasks. But the successes of the young Soviet state gave its foes no rest. They did everything possible to break up the peaceful labor of the Soviet people and on many occasions initiated military provocation on our borders. Imperialism engendered plans to destroy the socialist structure by force of weapons.

The perfidious attack of Hitler's Germany put our country and the Red Army in a difficult situation. The enemy gripped Leningrad in an iron ring, broke through to the near approaches to Moscow and seized Rostov-on-the-Don. An extremely adverse situation arose in 1942 on the southern wing of the Soviet-German front when Hitler's forces reached Stalingrad and the Caucasus. But the Country of Soviets did not falter. Under the leadership of the Communist Party it not only withstood, but decisively altered the course of military events. The Soviet Armed Fores crushed the Fascist hordes at Moscow and Stalingrad, dealt crushing blows to the enemy at the Kursk Bulge, right-bank Ukraine, in the Belorussian, Yassko-Kishinevsk, Vislo-Odersk, Berlin and other operations. In August 1945 the USSR, faithful to its socialist obligations, entered the war against Japan. Soviet forces brilliantly conducted the Manchurian strategic offensive operation, resulting in the defeat of the million-strong Kwangtung army. This played a deciding role in bringing about Japan's ultimate defeat.

The Great Patriotic War was the most severe event in the history of our Motherland. It decided the matter of the existence of the first socialist state in the world, the fate of world civilization. No other European country was able to withstand the violent onslaught of German's Fascist troops. But the Soviet Union was able to do it. The greatest service performed for mankind by our people and their courageous armed forces was their

decisive contribution to that Victory, to the liberation of Europe from Fascist slavery and the salvation of world civilization. From start to finish the Soviet-German front was the main front of the war. It witnessed the engagement of about three quarters of the armed forces of Fascist Germany and its allies. The Soviet Armed Forces showed themselves to be a first-rate army. Evaluating their operations and influence on the course of World War II, U.S. President F. Roosevelt wrote on 6 May 1942: "From the point of view of grand strategy...it is difficult to ignore the obvious fact that the Russian armies are destroying more enemy soldiers and weapons than all the remaining 25 states of the United Nations taken together."

The victory of Soviet armament demonstrated before the entire world the strength of the Soviet multi-national state and the indestructible unity of its army and people. The entire world—our friends as well as our enemies—became convinced over the course of the Great Patriotic War that the Red Army was an inexhaustible source of strength. This source was the structure of socialism, its progressive nature and deeply popular character. Our victory over Fascism showed that there were no forces in the world which could turn back the tide of history, which could stop the powerful flow of revolutionary transformation begun by the Great October. This was the chief result of the war—a stern warning to imperialist aggressors, an unforgettable and severe lesson of history.

The experience of the war demonstrated the vast economic, socio-political and spiritual capabilities inherent in the socialist order, the powerful moral force of Marxist-Leninist ideology, the superiority of Soviet military science and military art over bourgeois science, the wisdom and foresight of the Communist Party's strategic leadership.

The soul of all our labor and martial deeds has been our Party of Lenin. Communists were the first to mount the attack at the front, leading others through their example. In the rear they were the last to leave the work bench, the farms and the fields. "We may say with certainty," stated Comrade M. S. Gorbachev at a ceremonial event in Moscow dedicated to the 70th anniversary of the Great October, "that the years of the Great Patriotic War, replete with courage and daring, the extreme effort and self-sacrifice of millions of communists, comprise one of the most glorious and heroic pages in the existence of the party. The war showed that the Soviet people, the party, socialism and October are indivisible, and that there is no force in the entire world capable of undermining this unity."

The victory sustained by the Soviet people had a most profound effect on the fate of mankind and the lives of millions of people in every area of the globe. It further solidified the authority and international stature of the USSR and introduced new opportunities for the growth of the forces of peace, democracy and socialism. The world socialist system came into being and thrives today.

Western sources attempting to falsify history are today attempting to denigrate the role of the Soviet Union and its armed forces in crushing Fascism. Pursuing anti-socialist, class aims, bourgeois policy makers, sociologists, historians and publishers are making especially diligent and numerous efforts to conceal the true reasons behind the war and the imperialist objectives of the Western powers, to vindicate those guilty of waging the war and depict ruling circles in the United States, Great Britain, France and other capitalist countries as "consistent defenders of democracy," and "fighters against dictatorial regimes." They are striving, entirely without justification, to accuse the USSR of "cooperation with the aggressors" on the eve of World War II and during its early stages. These falsifiers of history are trying to present matters in such a way as to show the decisive blows against Fascism delivered not on the Soviet-German front, but rather in Africa and the Mediterranean region. They manifestly exaggerate the importance of creating a second European front in the summer of 1944. They explain the defeat of Fascist Germany through errors and miscalculations on Hitler's part, the vast territory and population of our country, its severe climate, and other factors of this nature.

Efforts of bourgeois ideologues to distort the socio-political foundations of the Great Victory are also mistaken and in vain. No matter how refined the slanderers' methods become, they will never suceed in refuting the historical truth that the Soviet Armed Forces proved during the course of the war that their moral-political condition could not be matched. Examples of their heroic feats are well acclaimed in military history. No military forces, no army has been able to display such mass heroism. The words of V. I. Lenin have come true: "...Russia is not only capable of producing singular heroes... No, we were right when we said that Russia will provide such heroes from among the masses, that Russia will turn out heroes by the hundreds and thousands" (Complete Works, vol 42, p 4).

The struggle between two irreconcilable ideologies, between socialism—the spiritual implement of the Soviet people and working peoples of the entire world, and fascism—the spiritual implement of the most reactionary forces of imperialism, was an extremely important component of the Great Patriotic War. The ideology of Marxism-Leninism, emerging as the theoretical foundation of the noble fighting qualities of the Soviet people, has been embodied in their heroic deeds on the front and at the rear in their just struggle against a detested enemy. The ideology of fascism, on the other hand, expressed the views and ideas used by Hitler's people to justify their criminal actions and achieve their reactionary aims contrary to the ideals of progress and justice. And whereas at the outset of the war the enemy enjoyed certain quantitative advantages in economic and military respects, the advantage in the ideological sphere was always on the side of the Soviet Union. It grew and accumulated strength thanks to persistent efforts of the party to effect ideological and political education among the masses.

The lessons of World War II have a significance which endures even today. The most important of these is the fact that we must struggle to insure that war does not break out. The smoke of the great conflagration had not blown away when imperialism again began to provoke military peril. The socio-political results of the second world war did not suit it and reactionist, imperialist circles were soon preparing a new campaign against the USSR, against democracy and progress.

Striving to consolidate their military-strategic positioning in the world, the United States, for example, ringed the globe with military bases and created a system of aggressive military alliances, the most significant of which being the North Atlantic (NATO) bloc formed in 1949. Plans for unleashing a new war against world socialism and effecting armed suppression of movements of national liberation underwent intensive development. American "hawks" brandishing nuclear weapons openly made their global claims.

Under these conditions the Soviet Union and the fraternal socialist countries were compelled to join forces in order to provide a favorable environment for the building of communism. In May 1955 the heads of government of the European socialist states concluded a pact in Warsaw on friendship, cooperation and mutual assistance. Pact participants created a combined armed forces and combined command. This alliance in the name of peace and socialism was formed with purely defensive aims.

In May 1987 the Warsaw Pact member nations openly stated the fundamental provisions of their military doctrine. It was stressed with absolute definitiveness that the organization's military doctrine, like that of each of its participants, is exclusively defensive in its nature and subordinate to the mission of precluding war. By virtue of the very concept of socialism, these states renounce the use of force in dealing with international problems. They espouse only peaceful means, political methods, in achieving settlement of all disputes.

Warsaw Pact member nations declared resolutely that never, under any circumstances, would they initiate military actions against any nation or alliance of nations unless they find themselves the target of an armed attack. They will never effect first use of nuclear weapons, and have no territorial claims against any country.

At the same time, the USSR and her allies are compelled to maintain their armed forces in a state of combat readiness sufficient to insure that they are never caught unawares and, in the event of an attack, are prepared to deal a crushing blow to an aggressor.

The establishment of military-strategic parity between the USSR and the United States, between the Warsaw Pact and NATO, is a historic achievement of socialism which has secured the position of the Soviet Union, the socialist countries and all progressive forces. It invalidates the imperialists' calculations that they will win a nuclear missile war and has become an important factor in safeguarding peace and international security.

Under today's conditions which threaten the very existence of mankind, the Soviet Union has proposed a specific program entailing complete elimination of nuclear weapons by the end of the 20th century. For more than a year and a half the USSR unilaterally observed a moratorium on nuclear testing and called upon all other nuclear powers to do likewise. The USSR and the fraternal socialist countries have undertaken other measures of major significance aimed at strengthening trust among nations, curtailing the arms race—to include conventional arms—and reducing the military danger. The Soviet-American treaty on the elimination of intermediate and shorter-range missiles was concluded at the initiative of our country.

At the same time, today's complex international environment and the aspirations of militaristic imperialist circles to disrupt military-strategic parity and achieve military superiority demand that we augment as quickly as possible our economic potential and do our utmost to strengthen the defensive capabilities of our country. They require us to maintain at the required high levels our country's defensive capacity, continued vigilance, and the state of training and combat readiness of our armed forces. This is a most important condition for successful realization of the plans charted by the 27th CPSU Congress, the guarantor of peaceful labor for the Soviet people.

The course being pursued by the CPSU towards accelerating socio-economic development in its contemporary stage is responsive to the fundamental interests of Soviet society. It is consolidating the country's economic and defensive might and facilitating enhancement of the armed forces' combat power. Army and navy servicemen unanimously approve the party's internal and external policies. Like all the Soviet people they are making their contribution to the overall cause of developing and perfecting socialism.

The armed forces of the USSR have entered a qualitatively new stage of development characterized chiefly by technical equipment modernization of the force based on acquisition of the newest weapons systems, an enhanced level of combat training and a more effective ideological education effort, and improvements in the system of troop administration.

Today we see especially vivid manifestations of such objective, natural laws governing the Soviet military establishment as increased party direction of the USSR armed forces. This has been brought about by the constant threat to the Soviet Union and all socialist countries from the forces of imperialism and by the increased complexity of the tasks faced by army and navy personnel. The leading role of the party is instrumental in

developing and implementing defense policy and Soviet military doctrine. The CPSU is making every effort to develop and perfect every aspect of our country's defensive capacity and consolidate military cooperation with the armies of the fraternal socialist states.

The party is doing everything necessary to effect the purposeful development of every element of the combat potential of the Soviet Armed Forces: military skills, high level of technical equipment stores, ideological steadfastness, personnel organization and discipline, loyalty to our patriotic duty and international obligations.

Restructuring is taking place in the army and navy as it is throughout the entire country. This is manifest in the new forms and methods being utilized by military cadre in their work, an increased sense of responsibility and greater efficiency on their part, innovative approaches to fulfilling assigned tasks, achievement of a true correlation between word and deed, a maximum approximation of military training conditions to those of actual combat. The most significant indication of the effectiveness of restructuring is seen in the state of combat readiness of our army and navy.

Under today's conditions, the high state of combat readiness of the USSR Armed Forces is a decisive factor, restraining the enemies of peace from engaging in acts of military provocation, adventurism and unleashing a new war. It is the objective tenet, sacred law and prime precept of our entire military policy. As Comrade M. S. Gorbachev noted at the 27th CPSU Congress, "the USSR's defensive might is maintained today at a level which provides for reliable protection of the peaceful labor and peaceful life of the Soviet people." The significance of the combat readiness and vigilance of our forces increases at times when the international situation is sharply exacerbated due to provocative actions of the militarists who place peace at the doorstep of war. Such an environment demands the utmost preparedness on the part of our armed forces. And until such time as some political mechanism is created for preventing war, there remains for the Soviet army and navy this inexorable truth: the greater their combat readiness, the less likehood there is that an aggressor will embark on nuclear adventurism.

Personnel of the Soviet Armed Forces tirelessly undergo training in the field, in the air and at sea. It is the basis of their combat readiness. The essence of the restructuring effort presently underway in this sphere comprises an intensification of military endeavor and increased yield therefrom, imparting a heavy pratical orientation to the overall system of training and educating personnel. This latter task is being accomplished primarily through rigid and consistent application of the principle whereby a soldier is taught what he needs to know in combat.

Great demands are being made with regard to the professional training of military cadre, their work style and methods. Each in his own area bears full responsibility for maintaining the high level of military training, moral and ideological education, personnel discipline. The main thing today that determines their professional skill level is the ability to seek out and quickly master new tactical methods and approaches in combatting the most modern enemy weapons systems and defending against them, to utilize to the maximum possible extent the increased strike, maneuver and defensive capabilities of our weapons and combat equipment.

Capable use of the rich experience of the Great Patriotic War plays an invaluable role in the training of personnel. It is true that the level of technical equipment stores currently in our armed forces is sharply greater than compared with those times; tactics, operational art and organizational troop structure are different. Training has changed radically. Nonetheless, the combat experience of the past has not lost its significance. Modern training of our forces and staff personnel is based on the instructional benefits derived from combat operations of the war years when ordinary weapons were used. Here we are concerned first and foremost with questions such as the approaches taken by commanders and political officers in accomplishing combat missions in a complex environment, their ability to engage in conflict with a numerically superior enemy force and attain victory through expertise and military resourcefulness.

Military cadre are devoting their primary attention to enhancing the moral-political and fighting qualities of personnel. At no time in the past has the moral factor played such an active, determinant role in accomplishing army and navy missions as it does in our current stage of development. This relates primarily to the nature of contemporary war as resolving the class conflict between two opposing socio-political systems. The unprecedented bitterness of combat demands that soldiers possess an unshakeable ideological tempering, a persistence of iron and unbending will to exercise courage and bravery, to achieve victory.

In implementing the statutes of the 27th CPSU Congress commanders and political organs are enhancing the effectiveness of party political work and strengthening its influence on all aspects of troop life and activity, facilitating the successful accomplishment of training and combat missions. Capably administered ideological education efforts have always provided the party with a powerful weapon for consolidating the moral spirit and fighting ability of the army and navy. Today such requirements have expanded: it is necessary to renew and reconstruct the forms and methods of accomplishing this, make them more specific and purposeful, tie them in more closely with troop activities.

The party organizations of the army and navy are the true centers of restructuring. They inspire personnel to enhance troop combat readiness and do a great deal towards developing openness, intra-party democracy, criticism and self-criticism, and the affirmation of a businesslike, principled approach. One of the most significant signs of the change being effected in the work of

party organizations is the relegation to communists of a progressive role—not just in words, but in deed—in combat training, duty performance and discipline.

The most important consideration in the work of communists, political organs, and party and Komsomol organizations, is the inculcating in our troops of ideological conviction and unbounded loyalty to the Soviet Motherland, their consistent education in the attainment of high moral qualities and internationalism, motivating them to provide comradely assistance, and developing their incentive to work tirelessly towards perfecting their combat skills and exhibiting a conscientious and honest relationship towards performance of duty.

An important vehicle for accomplishing ideological education tasks and enhancing servicemen's combat training is socialist competition. Commanders and political organs, party and Komsomol organizations strive to conduct this competition in an informal manner, observing such Leninist concepts as openness, comparison of results, and opportunities for implementing the most useful lessons learned.

One of the most significant areas of restructuring within the armed forces is the further consolidation of discipline and personnel organization, the universal affirmation of strict order according to regulations. The times in which we live are referred to with good reason as times of strict appraisal and exacting scrutiny of what has been achieved. This may be doubly applied to the sphere of military disipline. Lessons learned in the best military units and ships shows that where strict discipline, order and organization, and rigid execution of commands are observed, there will be found better performance in combat training and duty performance, a higher state of combat readiness.

The entire 70-year history of the Soviet Armed Forces confirms that their blood relationship with the people has constituted an inexhaustible source of combat power and a pledge of invincibility. The consolidated unity of people and army is embodied in the tireless effort exerted by the Soviet people and the party in technologically equipping and strengthening the armed forces in every possible way. Practically every labor collective contributes to safeguarding our country's defensive capabilities. For their part, Soviet servicemen actively participate in the socio-political and economic life of the country.

Servicemen in the army and navy are educated in the immortal ideals of Marxism-Leninism, in the spirit of steadfast communist conviction, Soviet patriotism. friendship among the peoples of the USSR and socialist internationalism. Today's generation of Soviet serviceman strives to be worthy of the heroic deeds of their fathers and grandfathers. A shining example of this is shown in the martial exploits of our internationalist servicemen assisting our brothers, the Afghan people, in safeguarding their revolutionary gains, the self-sacrifice displayed during the efforts undertaken to deal with the disaster at the Chernobyl nuclear plant, and assistance provided the general population during times of calamity.

Our armed forces presently find themselves—just like the country as a whole—at the initial phase of restructuring. Soviet servicemen realize that significant and complex work lies ahead with respect to eliminating the deficiencies we face and making that definitive, sharp turn for the better in qualitatively improving matters in our armed forces. They are fully dedicated to the development and assimilation of restructuring.

In developing the theory and policy of restructuring, analyzing its course of development and drawing the necessary conclusions, the January 1987 CC CPSU Plenum provided a powerful impulse to the restructuring effort, including that taking place within the armed forces. The plenum evaluated matters in the army and navy and reminded our cadre of their responsibility to the people for defending the gains of socialism, for further increasing their combat readiness and perfecting the military expertise of all services and branches of service in the armed forces. The 30 May 1987 session of the CC CPSU Politburo once again underscored the "fundamental importance of significantly enhancing the level of combat readiness and discipline in our armed forces, of capably directing our servicemen and maintaining their constant capability to suppress any and every encroachment upon the sovereignty of the Soviet state."

Evaluating the threat of real military danger on the part of the aggressive forces of imperialism and knowing their penchant for adventurism, the CPSU looks upon defense of the socialist Fatherland, and consolidation of USSR defenses and the might of the Soviet armed forces as the sacred duty of the Soviet people, the most important function of our socialist state. The main instructions issued, therefore, by the 27th CPSU Congress to servicemen of our army and navy state that "general enhancement of the combat readiness of our armed forces and the education of army and navy servicemen and all the Soviet people in the spirit of vigilance and constant readiness to protect the great gains of socialism must remain among the most important tasks of the party, the state and the people." These instructions of the party reflect the wisdom of Lenin's precepts and the historical experience of our struggle against aggressors.

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Great Britain's Rapid Deployment Forces

18010301b Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 1, Jan 88 (signed to press 7 Jan 88) pp 9-12

[Article by Colonel S. Anzherskiy: "Great Britain's Rapid Deployment Forces"]

[Text] In spite of the collapse of the colonial system and necessary transition by the imperialist nations to policies of neo-colonialism, the former colonial powers to this day resort to openly dictatorial methods and the use of military power in resolving international disputes. Thus, since the end of World War II, Great Britain has conducted more than 70 military operations of various scales in Asia, Africa, the Near East and Southern Atlantic to protect the "vital interests" of British monopolies. The most dangerous relapse to the colonial policies of British imperialism was Great Britain's grand-scale action in seizing the Falkland Islands (Malvinas) in spring-summer of 1982. This military operation cost the British people over one thousand dead and wounded.

British ruling circles, however, have drawn their own conclusions based on their experience of numerous military conflicts, especially the episode with Argentina in the Southern Atlantic. Following the example of their overseas ally, they set about the formation of a special operational group of forces, Rapid Deployment Forces (RDF), designed to conduct combat operations in any region of the world, primarily in areas outside the NATO zone where they believe threats to British interests may arise.

As reported in the foreign press, the chief regions for likely operational employment of the RDF are those countries with traditional ties to Great Britain, i.e., her former colonies and possessions in Africa, Asia, the Southern Atlantic and Caribbean Basin. In addition, it is felt these forces will be employed to provide military assistance to nations with pro-Western regimes by suppressing movements of national liberation. In this regard, intervention in the internal affairs of countries often takes place under the pretext of guaranteeing the security of British citizens and evacuating them.

Organizationally the RDF was formed in 1984 and consisted of the 5th Separate Airborne Brigade and the 3d Marine Brigade, considered the most highly combat ready and mobile armed forces units in Great Britain, and other units. Western experts believe that personnel of these units acquired substantial combat experience during the conflict between Britain and Argentina over the Falkland Islands (Malvinas). The total number of personnel assigned to the RDF amounts to more than 10,000 men.

The operational control element of the RDF is a special group of 12 officers formed from the headquarters of the Southeast Military District. When necessary it may be augmented to comprise 460 men, consisting of representatives from the headquarters of all services of the armed forces and administrative elements.

The 5th Separate Airborne Brigade at Aldershot is considered the main component of the RDF. It consists of headquarters, 2 airborne battalions, one motorized rifle battalion, one each artillery, reconnaissance and engineer regiment, 5 combat and administrative support companies (signal, transportation, maintenance, supply and medical), helicopter squadron, air defense platoon, and other units. The brigade numbers about 5000 men. Its main armament consists of 105-mm towed cannon (18 guns), 81-mm (24) and 51-mm (27) mortars, Milan anti-tank rocket launchers (48), Karl Gustav anti-tank rocket launchers (81), Gazelle helicopters (12), Blowpipe missile launchers, Fox combat reconnaissance vehicles and other armament.

The 3d Marine Brigade at Plymouth is the next most important RDF component. It includes a headquarters, 3 Marine battalions, artillery regiment, maintenance and logistics regiment, helicopter squadron and other units. The brigade numbers over 5000. Its main armament consists of 105-mm towed light cannon (24 guns), Milan ATGM launchers (54), 81-mm (18) and 51-mm (27) mortars, Karl Gustav rocket launchers (27) and other armament.

It can be deduced from the Falklands (Malvinas) conflict that units of the 22d Special Operations Regiment may be attached to the British RDF. This regiment consists of a headquarters, 4 commando-reconnaissance companies, training and administrative units. Each commando-reconnaissance company (78 men, including 6 officers) has 4 platoons—amphibious, airborne, mountain and maneuver—each of which (16 men) is subdivided into 4 operational groups. The Special Operations Regiment numbers 600-700 men. Its armament consists of 5.56-mm automatic rifles, 9-mm pistols, Landover vehicles, other specialized equipment and weapons.

According to foreign experts, depending on the mission, remoteness of operational deployment region and the scale of combat operations, the RDF may include ground forces units, tactical aviation, military air transport, and a combat naval detachment including one or two ASW aircraft carriers and one or two nuclear submarines, as well as auxiliary ships.

RDF units may be deployed to areas of combat operations by air or sea, or by a combination of methods. They may be air-dropped or delivered, or be transported to airfields and ports some distance from the area of operations. The British Air Force has more than 60 military transport aircraft available for troop airlift.

British combat operations in the Southern Atlantic show that the basic role in preparation and conduct of the operation to seize the Falklands (Malvinas) was played by the navy. Overall time of deployment for the naval

groups of forces was 25-30 days (12-14 days for the trip to Ascension Island, 3-4 days for resupply and formation of naval detachments on the island, and 10-12 days en route to the area of combat operations). British naval forces were tasked with the following missions in the region of conflict: attain naval and air superiority, provide security for the assault force advance, and provide air and fire support for the ground forces upon their disembarkation on shore and engagament in combat operations. In certain instances the naval forces are considered capable of seizing island territories independently.

The training of RDF units for combat operations under adverse physical-geographical conditions in remote locations is accomplished both in Great Britain and overseas. The first RDF training exercise, named "Purple Victory," was condicted in November 1985 in southwest Shotland. Taking part were units of the 5th Separate Airborne Brigade, 3d Marine Brigade, and tactical aviation units (total participants numbered more than 1500).

A major training exercise for British RDF personnel was conducted for the first time outside Europe in November-December 1986 on the territory of Oman, on the Arabian Peninsula. Designated "Swift Sword," this exercise involved units of the 5th Separate Airborne Brigade, 3d Marine Brigade, an aviation unit (with up to 10 Tornado fighter-bombers), a combat naval detachment and Omani army units. Approximately 5000 men took part in all.

The basic purpose of the exercise was to work out a scenario of providing direct military assistance to a "friendly nation" in a remote region of the world and evacuate British citizens "in danger." It involved the employment of offensive and defensive tactics by combat units along with tactical aviation and naval forces in the coastal region, mountain and desert.

Great Britain's military-political leadership is continually developing its Rapid Deployment Forces. Improvements are being made in enhancing combat readiness and strategic mobility, and in increasing the combat capabilities of units by outfitting them with new types of weapons and equipment. An important factor in increasing the level of fighting ability is the necessity to conduct operational and combat training for troops, staff and headquarters allocated to the RDF under conditions approximating to the greatest possible extent those of the intended area of operations. In this regard, the majority of British RDF exercises are organized jointly with Great Britain's allies situated outside Europe.

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West European Project Eureka

18010301c Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 1, Jan 88 (signed to press 7 Jan 88) pp 19-20

[Article by Colonel V. Almazov: "West European Project Eureka"]

[Text] Project Eureka was proposed by France in the spring of 1985 and is currently supported officially by 18 Western countries (the Common Market nations, Austria, Switzerland, Sweden, etc.). Its main purpose, as reported in the foreign press, is to strengthen the European industrial base by assimilating new technologies and improve industrial competition in the world market as soon as possible by creating a so-called "European technological society."

The military-political leadership of the United States is attentively keeping track of this project as it relates to development of its "Star Wars" program. Thus, Vice President Bush announced that Eureka was a program of research not fundamentally related to the area of "strategic defense." But, according to Bush, SDI and Eureka are totally compatible.

The decision to form the "European technological society" and ratification of the Eureka project took place in November 1985 in Hannover, West Germany, at an international conference on the ministerial level. A general outline of the goals and principles of cooperation to be employed under the Eureka framework was formulated at the conference, as was also the basic orientation of scientific research efforts for accomplishing it.

Scientific research and experimental design work is being undertaken within the Eureka framework along five main tracks:

"Euromatika"—research in the sphere of information technology—envisions the building of a new-generation super-computer capable of performing up to 30 billion operations per second and having an operational memory of 1 billion 64-digit words. Western military experts believe such super-computers will facilitate the emergence of multi-functional, highly efficient means of effecting command and control of troops and various weapons systems, and will involve the use of artificial intelligence. Special attention in this regard will be devoted to the microelectronic components, particularly to the planned assimilation of integral systems production based on gallium arsenide for increasing survivability in view of the destructive effects of nuclear burst.

"Eurobot." Efforts in this sphere may lead to the building of remote-controlled, subsequently autonomous, combat robots in the Western European countries with artificial intelligence components. Research in this area is also planned with respect to robotics using high-energy chemical lasers (eximeric and free-electron).

"Eurocom" scientific research and experimental design work is aimed at creating wide-band communications and data transmission systems at speeds of up to 2 gigabits/sec, and the commutation devices necessary for such systems, terminal apparatus using satellite communications, etc. In addition, the industrial assimilation of optical communications technology is envisioned using fiber optic cable which will facilitate enhanced secrecy and jamming/interference resistance of lines of communications.

"Eurobio" is an effort directed at combining the scientific and industrial potential of the Western European countries for conducting fundamental and applied research in the biological sphere, especially with regard to genetics and biotechnology, for obtaining rare chemical compounds and components for bionics and bioelectronics. The results of such research may be used to create new types of chemical and biological weapons and the means of defending against them.

"Euromat" entails the development of technology to obtain optimal characteristics, as compared with existing materials, in construction and other special materials. The use of special steels, light alloys and composite materials having enhanced durability with thermal and wear-resistance will facilitate the further sophistication of weapons and combat equipment.

Several conferences have been held to date during which the participating nations have adopted a charter, appointed directive agencies and programmed efforts under 26 sub-programs.

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The United States Army

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[Article by Colonel G. Vasilyev: "The United States Army"]

[Text] With the accession to power of the Reagan administration, the rate at which the United States has been conducting the arms race increased in every direction. Attempting to tilt the balance of military-strategic parity in its favor, the Pentagon is intensively pursuing a "comprehensive program for rearming America." Along with increases in the most modern offensive, first-strike nuclear missile systems and the establishment of a space weapons program, general purpose forces—primarily the ground forces, the army—are projected to undergo comprehensive development.

Overall structure. The United States Army is one of the main services of the U.S. armed forces and the one with the greatest strength levels. It is traditionally relegated the role of main strike force in a war, especially a conventional war. Army forces (in conjunction with the U.S. Air Force, U.S. Navy, allied forces and those of supporting reactionary regimes) are designed to conduct unified and combined air-ground operations in every type of warfare, using conventional arms and weapons of mass destruction outside U.S. territorial boundaries—in Europe, the Far East, Southwest Asia and Central America.

U.S. military authorities believe the army's ability to achieve and maintain ground superiority allows the country's military-political leadership to employ its ground forces flexibly in varying political and military endeavors to achieve U.S. imperialist ambitions in "guiding the world." As underscored in field manual FM 100-1, only the army can establish direct and extended control of enemy territory, resources and population. In conformance with U.S. legislation, overall direction of the army (matters of organization, strength, readiness and general logistics) is exercised by the President through his Secretary of Defense and Secretary of the Army, 15 major and 8 subordinate commands, while direct control (operations planning and immediate combat employment) is effected by a committee of the Joint Chiefs of Staff, commanders of the unified armed forces commands and commanders of the army component commands.

The U.S. Army is divided by degree of combat readiness and operational mission into the regular army and organizational reserve.

The regular army comprises the first strategic echelon and includes army (airborne) corps, divisions and separate brigades, fully manned and combat ready, outfitted with modern armament and combat equipment. Field armies may be deployed in wartime, as was the case during World War II. The regular army's combat and authorized strength amounts to over 780,000 men (up to 110,000 general officers and officers, more than 670,000 sergeants and enlisted men), 6 army headquarters, 6 corps headquarters, 18 divisions (4 light infantry, 1 infantry, 1 motorized, 6 mechanized, 4 armored, 1 airborne, 1 air assault), 8 separate brigades (2 infantry, 3 mechanized, 2 armored, 1 helicopter anti-tank), 3 separate armored cavalry regiments. In addition, the regular army has a variety of combat support and combat service support units, special units, military establishments and facilities.

The second integral component of the army is the organizational reserve, consisting of the national guard and army reserve. According to foreign press reports, the organizational reserve has more than 770,000 men (about 100,000 general officers and officers, over 670,000 sergeants and enlisted personnel), 10 divisions (1 light infantry, 5 infantry, 2 mechanized, 2 armor), 21

separate brigades (11 infantry, 7 mechanized, 3 armor), 4 separate armored cavalry regiments, 12 training divisions, 20 reserve command staffs and headquarters, numerous combat support and combat service support units, military establishments and facilities. The organizational reserve is designated the main base for mobilization deployment of the ground forces and is used to bring the regular army up to full strength during periods of tension, as well as to replace combat casualties, reinforce existing units and formations and form new ones during the course of a war.

In all the U.S. Army's armament (including that of the wartime reserves) consists of about 150 Pershing-2 guided missile launchers, 72 Lance, over 14,000 tanks (of which about 5000 are the M1 and M1A1 Abrams variety), up to 24,000 infantry fighting vehicles and armored personnel carriers, about 17,000 field artillery guns and mortars (including approximately 4400 nuclear-round howitzers), over 350 MLRS launchers, more than 17,000 ATGM launchers, over 5000 air defense missile complexes, and up to 10,000 helicopters and army aviation aircraft.

According to American experts, regular army units comprise 53 percent of the overall number of army units (reserve components—47 percent), 48 percent of combat formations (reserve components—52 percent), and 38 percent of the combat support and combat service support units (reserve components—62 percent).

To effect a demonstration of force and "protect the vital interests of the free world," forward groupings of U.S. ground forces (more than one-third) are stationed outside United States territory even in peacetime, ready to conduct active combat operations and policing actions.

The most powerful and combat ready grouping of ground forces is concentrated in Western Europe (mainly in West Germany) and targeted against the Warsaw Pact nations. As noted in the foreign press, these forces are outfitted with modern offensive weapons—including nuclear weapons—and possess a great deal of fire and striking power. They include more than 200,000 servicemen (about 30 percent of the regular army total), 2 army corps (of 2 divisions each), 3 separate brigades, 2 separate armored cavalry regiments, various other combat support and combat service support units, up to 150 ballistic missile launchers (including 108 Pershing-2), 5000 tanks, 2500 field artillery guns, mortars and MLRS launchers, over 5000 ATGM launchers, 1200 helicopters and army aviation aircraft. Along with the Bundeswehr forces, these troops comprise the NATO bloc's main strike force, deployed in immediate proximity to the socialist countries.

The American army contingent in Western Europe can, according to foreign press reports, be augmented by troop airlift of 6 combat-ready divisions from the United States in 10 days. It is the interests of rapid reinforcement of this group of forces on the territories of a number of Western European countries that we see a continuation of the early (pre-) positioning of reserves of heavy weapons and military equipment for American forces augmentation. According to Pentagon estimates, this accumulation of modern weapons systems will enable the airlift of personnel in these divisions along with their combat support and combat service support units to be accomplished in a short period of time, thus sharply increasing the offensive capabilities of this grouping of forces.

Second in numerical strength and operational significance is the United States grouping of ground forces in the Pacific Ocean region—near the borders of the Soviet Far East and other socialist states of the region. The main component of these forces is comprised of the 2d Infantry Division in Tonduchon, South Korea, and the 25th Light Infantry Division at Sheffield Barracks, Hawaii, along with combat support and combat service support units. Its total force numbers more than 50,000 men, over 140 tanks, up to 230 field artillery pieces, mortars and MLRS launchers, over 500 ATGM launchers, 600 helicopters and army aviation aircraft.

According to Pentagon experts, "these forces form our first zone of strategic defense in the Pacific." As noted in foreign press reports, a Lance missile battery was deployed to the Korean Peninsula from the United States in 1987 to augment the combat capabilities of these forces. Efforts continue with respect to pre-positioning of American reserves of weapons, military equipment and supply items on the islands of Japan. The U.S. Army Pacific (headquarters at Fort Shafter, Hawaii) was created in an effort to centralize command and control of military preparations in the region and achieve closer cooperation with troop formations of friendly reactionary regimes. In the event an armed conflict is unleashed, the U.S. command also envisages deployment of units from the 1st Army Corps (Fort Lewis, Washington) to the region.

U.S. Army forces in Central and South America are represented by the 193d Separate Infantry Brigade, Fort Clayton, Panama, and by combat support and combat service support units. According to foreign press reports, their chief mission is to retain United States control over the strategically important Panama Canal and its adjoining territory, provide an American military presence, and counteract the national liberation movement in the region.

The U.S. Army contingent in continental United States is comprised of an armed forces strategic reserve with the mission of reinforcing U.S. troops in overseas theaters in the event of war. It includes up to 500,000 men, 6 army headquarters (in territorial military districts), 3 corps staffs, 11 divisions, 4 separate brigades, a separate armored cavalry regiment, and combat support and combat service support units, other military establishments and facilities. In addition, the 6th Light Infantry

Division is situated in Alaska, and other separate ground forces units, including combat support and combat service support units, are located in other regions of the world.

In accordance with existing law, the U.S. Army is brought up to and maintained at prescribed personnel strength, as with the other services of the armed forces, primarily on a voluntary basis. Healthy and politically reliable citizens of both sexes, aged 17-34, are accepted for active duty military service in the regular army. Upon taking the military oath, selected candidates sign a contract and are dispatched to training centers. Recruit training includes a period of basic training (eight weeks) and training in a selected specialty (four-eight weeks). As reported in the foreign press, beginning in the early 1980's a complicated program of selecting and training recruits—the so-called "regimental" system—was introduced into the army. Essentially this entails a system in which recruits, primarily from one state of the country, spend their entire period of service in the same unit, in the same regiment. Organizationally, each regiment includes four-six battalions of one type subdivided into several training companies (batteries). Upon completion of basic training, the recruits move as a company or battery unit to higher regular army units in the continental United States for further training and service. After serving 15-21 months, they and their companies (batteries) are deployed to overseas theaters, where they complete their remaining term of service. In 1987 United States Army units numbered up to 80 such regiments (combat, combat support, combat service support).

Each year the ground forces admit 300,000 - 350,000 men depending on specific requirements. It has been noted in foreign press reports that the number of recruits with high school education has increased in recent years (in 1986 they constituted up to 90 percent of the total force). The number of women on active U.S. Army duty has also increased (currently 80,350, including 11,200 officers and 69,150 sergeants and enlisted).

The officer corps is constituted primarily from the privileged and reactionary segments of the population. They undergo training at the West Point Military Academy (candidates are selected upon recommendation of the President or one of the state governors for a four-year period of training; 1000 or more officer graduates are turned out each year), at reserve officer training programs conducted at civilian universities (four-year training program; 60,000 - 65,000 students enrolled; annual turn-out of 8000 - 10,000 graduates), and at officer candidate schools (with an annual turn-out of 500-2000 officers). Additionally, officers are selected and trained from among the most capable warrant officers, sergeants and enlisted personnel who have served eight years or more in the regular army, and from among civilian personnel where specialties are required. The annual overall influx of officers into the regular army comprises 12,000 or more individuals.

According to American authorities, operational and combat training of the ground forces is designed to maintain their high state of readiness so as to be able to accomplish missions in every type of modern conflict: low-intensity (demonstrations of force, limited combat operations), medium-intensity (operations utilizing only conventional means of destruction), and high-intensity (large-scale combat operations entailing the use of nuclear weapons).

Exercises comprise the basic means through which operational and combat training is accomplished in the army: field exercises conducted jointly with other services of the armed forces and allied forces, at corps, division, brigade and battalion levels; command post exercises using maps, with the partial participation or designation of troop units; mobilization exercises. In addition, operational and combat training is conducted in the form of special tactical exercises and drills, practices, evaluations, a variety of combat readiness inspections, etc. These are characterized by the widespread use of computer technology, mock-ups, simulators and other training devices in the exercise process, as well as the application of modeling techniques in conjunction with combat operations.

Major exercises employing ground forces units (of the "Reforger," "Team Spirit," or "Bright Star" variety) are usually conducted according to a standard format in three interrelated phases, with an overall duration of 60 days or more. During the first phase, forces undergo transition from a peacetime to wartime footing. They are transported by air or sea, or a combination of the two, to the areas of operation. The second phase deals with matters of the organization and conduct of combat operations and the provision of comprehensive combat support and sombat service support. The third phase entails the exercise critique, for which exercise participants return to the permanent staging areas. At least 70 exercises with diverse aims, composition of participating units and missions to be accomplished are conducted annually in the U.S. Army on corps-brigade level.

Characteristic of the structure and formation of U.S. ground forces is their constant improvement and sophistication, which the military-political leadership has justified under the pretext of exclusively defensive aims, as it were. The growth of U.S. ground forces offensive combat capability as seen in the overall context of their military preparations reflects the striving of the American administration to achieve military and technological superiority over the Soviet Union and the other countries of the socialist community on a global and regional scale.

As each new administration comes to power in the United States, it reviews, as a rule, the country's military strategies as well—we see the "massive retaliation" of the early 1950's, the "flexible response" of the 60's, "realistic deterrence" of the 70's, and "direct confrontation" of the 80's. The political foundations and essence

of United States military doctrine, however, like its anti-Soviet orientation, remains as before. Only the means of achieving political and military ends, the nature and orientation of army development within the armed forces have changed. The emergence of nuclear weapons in the early post-war years caused American leaders to reevaluate their views with respect to the role and significance of ground forces in a war, which was to some degree reflected in their structure and formation. These views underwent significant changes in the period that followed and led to a conclusion to the effect that it would be impossible to insure victory—in a nuclear missile war as well—without the presence of a multi-million dollar army. It is for this reason, therefore, that its development continues even now. New types of weapons systems and combat equipment are undergoing intensive development. Just about every two-three years a reappraisal is made as to the organizational structure of major units and changes are made reducing their unwieldiness, while at the same time increasing their fire power, strike capacity and mobility. Large-scale U.S. units in World War I were characterized by a core of four regiments. In World War II this was reduced to three; in the 1950's, the so-called "Pentomic" era, it consisted of five combat groups, and in the 60-80's—of three brigades.

Further development of the ground forces is currently proceeding in accordance with the "Army-90" program (1981-1990) which calls for the introduction of fundamentally new means of waging armed conflict, primarily high-accuracy weapons. Its purpose is to create an army balanced in structure and composition (an optimal combination of "heavy" and "light" major units, of regular army and reserve component units), and with a high degree of fire power and strike capacity, anti-tank capabilities, strategic and tactical mobility. Measures envisioned in this program call for the systematic re-outfitting of large units with modern armament and combat equipment, a reevaluation of their organizational structure, and a search for optimal means of their combat employment.

Implementation of the Army-90 program is arbitrarily divided into several phases, but practically speaking will be accomplished simultaneously. The first phase entails building the so-called "heavy" divisions (mechanized and armored), which are intended chiefly for combat operations that would apply to combat in the European theater. The essence of reorganizational measures in this sphere consists of significantly increasing the fire power of major and subordinate units, including that devoted to destruction of tanks and other armored targets. It involves the formation of small-scale motorized rifle and tank units of reduced composition but which have greater mobility and ability to conduct autonomous operations, and entails improvements in the system of command and control of division forces and assets. A practical illustration of the measures being implemented can be seen in the addition of an army aviation brigade to the division (146 helicopters, including 50 AH-64A Apache fire support helicopters) and an MLRS battery (9 launchers), the increase from 18 to 24 guns in each 155-mm self-propelled howitzer battalion, the inclusion of a fourth company in the motorized rifle (tank) battalions, and the formation of support battalions for the brigades. The regular army has a total of 10 such "heavy" divisions.

The second phase of the program entails the formation of qualitatively new large-scale units ("light" divisions) possessing a high degree of strategic mobility and designated primarily for conducting combat operations in low-intensity conflict in an unprepared theater of combat operations, both independently and as reinforcement for groups of American forces already deployed. These may also be employed in medium- and high-intensity conflict in prepared theaters. The U.S. Army has a total of five light infantry divisions, one of which belongs to the national guard.

Subsequent phases of the Army-90 program call for the reorganization of army corps and ground forces commands in theaters of combat operation for the purpose of increasing their fire power and strike capacity, and augmenting their capabilities of providing comprehensive combat support—especially for air defense and electronic warfare assets—and combat service support.

Deliveries to troop units of modern weapons systems and combat equipment are being made in accordance with the program. In 1980 series production was begun in a new sphere of armor technology: M1 Abrams tanks (about 5000 have already been delivered), M2 Bradley infantry fighting vehicles, and M3 combat reconnaissance vehicles (up to 4000). Plans call for the delivery of about 7500 Abrams tanks and up to 7000 infantry fighting vehicles and combat reconnaissance vehicles in all to army units. According to Western military experts, this will result in an almost twofold increase in the tank inventory and will significantly increase the army's strike force.

Augmentation of U.S. Army fire power is being achieved through the development of qualitatively new weapons systems, increases in their number, and enhanced effectiveness of field artillery pieces and ammunition already on hand. MLRS deliveries to troop units have been underway since 1983. According to American experts, a volley of 12 MLRS launchers is equivalent in destructive power to a volley from 3 artillery battalions of 203.2-mm howitzers. More than 20 RS-30 batteries (9 launchers each) have been deployed to army corps and divisions. Plans call for the deployment of 47. Over the period 1960-1987 the number of nuclear-capable artillery pieces increased from 280 to more than 4000. As stated in the foreign press, increased numbers of 155- and 203.2-mm artillery systems in army divisions may result in a 25 percent increase (to total more than 700 guns) in the U.S. nuclear artillery inventory positioned in Europe by 1990.

The army continues to be outfitted with anti-tank weapon systems as well: TOW, Dragon and Hellfire anti-tank missile systems. TOW-2 missile deliveries to units have been in progress since 1983, including units located in Western Europe. The 155-mm M712 Copperhead guided anti-tank artillery round with semi-active laser homing head (armored target destruction range up to 16 km) is entering the inventory. Deployment of AH-64A Apache fire support helicopters (the first such battalion was deployed in 1986 and is believed to have 29 helicopters) continues, as does that of the general-purpose UH-60 Blackhawk (already 34 companies of a planned 54 have been outfitted). Overall, according to foreign press reports, the U.S. Army has already accomplished a 30-40 percent modernization.

Principles of combat employment. Qualitative improvements in armament and in the organizational structure of large- and small-scale units is being accompanied by a search for the optimal means of employing their increased combat capabilities. A practical illustration of the Pentagon's aggressive aspirations in this sphere can be seen in the intensive development at the end of the 70's/beginning of the 80's of views and concepts on the possible nature of combat operations. As a result, there has appeared a third component to the American concept of military art—operational art (this had earlier consisted of strategy and tactics alone).

An important element of the concept of operational art is that adopted at the beginning of the 1980's of the "air-ground operation (conflict)," representing a further development of the concept of "active defense" (see table). Essentially, the concept entails combat operations carried out by ground forces, air assault and air forces, carefully planned and coordinated with respect to time, location, personnel, equipment, and maneuver to be effected, using a variety of weapons systems, combat equipment and electronic warfare assets directed towards the destruction of an opposing enemy throughout the depth of his operational formation. This concept is defined by the American leadership as a means of combat employment for army and air force units and formations operating in close coordination in the interests of accomplishing assigned combat missions. It is envisaged that achievement of its aims will be secured through the execution of operational maneuvers and the conduct of a series of interrelated operations (battles).

The basic principles of the air-ground operation are reflected in the concept of "battle with second echelons (reserves)" adopted by NATO's combined armed forces and regularly practiced during bloc exercises.

In general, the composition and formation of U.S. ground forces, as reported in the foreign press, is subordinate to the main task at hand—that of insuring pursuit of America's aggressive policies of imperialism through the conduct of combat operations beyond their borders which vary in scope, intensity and methods employed.

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Army Tanks of the Capitalist Countries

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[Article by Colonel N. Fomich: "Army Tanks of the Capitalist Countries"]

[Text] Foreign military specialists believe that in spite of the emergence of effective anti-tank weapons, tanks remain today the main source of strike power for the ground forces during the conduct of combat operations under both conventional and nuclear weapons employment conditions.

The core of the tank inventories of the armies of the developed capitalist countries is comprised of tanks of the so-called second post-war generation. Entering the inventory during the first half of the 1960's, these are often referred to by foreign publications as main battle tanks. They have a traditional (classical) configuration with cannon positioned in a rotating, armor-protected turret, engine and transmission in the tank stern, and crew located separately (commander, gunner and loader in the turret; driver-mechanic in the forward compartment). An exception is the Swedish STRV-103B turretless tank.

In the 1970's a number of capitalist countries modernized these tanks, increasing their fire power by stabilizing the main gun, improving and developing tank ammunition, and introducing modern fire control systems. At the same time, the United States and West Germany were working on the development of a new generation of tanks. As noted in the foreign press, the combat characteristics of the American M1 Abrams and West German Leopard-2 tanks entering the inventories surpassed those of the existing versions by a factor of 1.5-2. Since 1983, Great Britain's ground forces have been outfitted with the Challenger tank. Experimental models of new tanks have been built in France, Italy, Japan and Brazil. They all possess a multi-layer armor body and turret, are equipped with powerful engines, armed with 120-mm cannon, and outfitted with the newest fire control systems.

In recent years the concept of so-called dynamic protection or "active armor" has been propagated, consisting of an array of armor-protective plating with explosive mounted on top of the main body armor and turret. It was used for the first time in 1982 on the Centurion, M48 and M60 tanks used by Israel in its aggression against Lebanon. The new foreign tanks are equipped with effective, automatic, quick-reaction fire extinguishing systems. More sophisticated fire control systems are

being introduced. Qualitatively new types of ammunition are presently being developed for tank cannon, first and foremost the armor-piercing, sub-caliber, fin-stabilized projectiles with separating sabot.

According to foreign press reports, the main effort in developing future tanks is being directed, as before, towards increasing their fire power, enhancing their mobility and improving protection. In this regard, Western specialists stress the importance of incorporating into the tanks the latest scientific and technological achievements, a factor which will allow them to retain their role as one of the basic means of combat within the armament scheme of the armed forces. Thus, the United States is currently working through the problem of utilizing electromagnetic cannon on future tanks. Presented below are the main battle tanks currently in the army inventories of the capitalist countries and certain experimental varieties as well. Tactical and technical characteristics are as shown in the table.

The United States occupies the leading position in the capitalist world with respect to the development of tank armor technology. A significant number of American tanks have been delivered to NATO bloc countries and other nations.

The core of the U.S. Army's tank inventory (including national guard and reserve) are the M60A3 (more than 7000) and the M1 Abrams (about 5000) tanks. In addition, over 600 M60 tanks are on hand and national guard units have up to 1500 M48A5 tanks (plans call for their replacement with the M60A3). The M60A2 tanks with missile-cannon armament have been withdrawn from the ground forces and placed in storage. They will be modified to become armored bridgelayers, combat engineer tanks and obstacle-clearing equipment.

The M60A3 tank, a modernized variant of the M60A1, has been provided to the ground forces since 1979. Its hull and body are cast. Its main armament is the 105-mm M68 rifled cannon, guidance-stabilized in two planes. A 7.62-mm machine gun is coaxially mounted. The gun's fire control mechanism and turret's turn mechanism are electrohydraulic. The fire control system includes laser rangefinder, electronic ballistic computer and necessary sensor apparatus. Mounted at the gunner's position is the AN/VGS-2 infrared sight; other crew members use non-illuminated night vision devices.

Mounted in the rotating commander's cupola is a 12.7-mm machine gun for conducting fire against ground and air targets. Observation is effected using eight glass vision blocks around the cupola perimeter and a periscopic sight mounted in the forward section. The tank has a combat load of 63 rounds, 5950 7.62-mm cartridges, and 900 12.7-mm cartridges.

Mounted on the M60A3 is a 12-cylinder V-type AVDS-1790-2A diesel engine, air-cooled with Crossdrive hydromechanical transmission. It has individual torsion suspension with hydraulic shock absorbers on the first, second and sixth bogie wheels.

The tank is equipped with a filter ventilation system, heating unit, automatic fire-fighting system, radio and tank intercom. Water obstacles up to 2.4 meters in depth can be negotiated after some preliminary preparation; those up to 4 meters deep—with the use of underwater operating equipment. Smoke screens may be laid using a thermal smoke device or firing smoke grenades mounted on the sides of the turret.

M60A3 tanks have been delivered to the ground forces of Austria, Egypt, Israel, Jordan, Saudi Arabia and Tunisia.

The M1 Abrams tank entered the U.S. Army inventory in 1980. As noted in the foreign press, its combat characteristics significantly surpass those of the M60A3, especially with respect to protection. Its body and turret are welded. Multi-layer armor (similar to the British "Choban" armor) is used in the forward part. The body sides and certain carriage components are covered with armor skirting. Characteristic of the M1 Abrams tank is the great angle of slope of the frontal upper-body plate (the driver-mechanic assumes a reclining position in the closed-hatch mode). Significant attention was devoted to isolating the crew from ammunition and fuel stores through the installation of armored partitions. The tank has an automatic, quick-reaction, fire-fighting system which uses compressed helon gas as extinguishing agent.

The armament of the Abrams tank is the 105-mm M68E1 rifled cannon, a somewhat more sophisticated variant of that mounted on the M60 series tanks. It is guidance-stabilized in two planes. The drives are electrohydraulic. The fire control system includes an electronic ballistics computer built with solid-state components. A laser rangefinder is built into the gunner's main combined (day and night) periscopic sight and is linked to the commander's device. The gunner also has an auxiliary telescopic sight.

Armor-piercing sub-caliber projectiles comprise the core of the combat load. Of 55 rounds, 44 are located in an isolated compartment in the rear of the turret. Access to these is provided by an opening in the armored partitions.

For the first time in foreign tank construction a gas turbine engine, the AGT-1500, has been installed in the M1 Abrams and provides fairly great mobility. The tank has an automatic, hydromechanical transmission (four drives in the forward axle/wheel assembly, two in the rear). It has torsion suspension with turbohydraulic shock absorbers on the first, second and seventh bogie wheels. The tracks have rubber-metal joints and detachable rubber pads.

The tank is equipped with a protective system for weapons of mass destruction, a heating unit, radio and sextuple grenade launchers for laying smoke screens.

Deliveries to the U.S. Army of a modernized version of the Abrams tank, the M1A1, were begun in 1986. A total of about 4200 are planned to be issued. The main difference between this tank and the basic version is its 120-mm smooth-bore cannon, the same as that mounted on the West German Leopard-2. The combat load has been reduced to 40 rounds. Armor protection for the turret has been somewhat reinforced.

The combat mass of the tank was increased (57 tons), partial modifications having been made to the transmission, lateral drives and suspension. A hydropneumatic suspension may be used in the future. Along with individual means of protection (protective mask), the M1A1 Abrams tank is outfitted with a system for creating differential pressure in the tank's fighting compartment so as to improve crew protection for operations in contaminated terrain. It is planned to install more sophisticated fire control system components in subsequent models, including laser rangefinder (carbon dioxide) and a new commander's sight. Infrared apparatus will be used for night operations.

Great Britain has about 1300 tanks in its ground forces inventory, the majority of which (over 900) are Chieftain. About 300 new Challenger tanks have been delivered since March 1983. The Centurion tank has been withdrawn from the inventory and is now used chiefly for training purposes.

The Chieftain tank has already been in the British ground forces 25 years. Foreign experts believe it has fairly reliable armor protection, although this has resulted in increased combat mass. The upper frontal body plate has a great angle of slope. Characteristic of this tank is the fact that the driver-mechanic assumes a reclining position for the combat mode of operation.

The main armament of the Chieftain is the L11A2 122-mm rifled cannon, guidance-stabilized in two planes. A 7.62-mm machine gun is coaxially mounted. The tank also has a 12.7-mm ranging machine gun and a 7.62-mm anti-aircraft machine gun has been mounted on the commander's cupola. The combat load consists of 64 separately loaded rounds.

A six-cylinder multi-fuel engine and mechanical transmission are installed in the tank. The transmission system is interconnected with the springs and shock absorbers. The track has metal joints and rubber lining.

The Chieftain tank has undergone several stages of modernization directed primarily towards increasing fire power through the use of more sophisticated fire control systems. It has been purchased by Iran (over 700), Kuwait and Oman.

Although based on an improved version of the Chieftain, the Challenger is practically a new tank and its combat characteristics significantly exceed those of previous models, especially with respect to providing protection. Its body and turret are made of multi-layer Choban armor. Steel armor skirting is positioned on the sides.

The Challenger's configuration is basically the same as that of the Chieftain. It too is armed with the 120-mm rifled cannon, but it is the sophisticated version. It has a dual-plane stabilizer. Most of the combat load consists of armor-piercing sub-caliber rounds, including those with depleted uranium alloy core. The fire control system includes a laser sight-rangefinder and electronic ballistics computer. The commander's periscopic sight has stabilized field of vision and is linked with the gunner's main sight. Challenger tanks are currently being outfitted with an infrared sight for the gunner.

The 12-cylinder V-form diesel engine is made in a single block with the hydromechanical transmission. The carriage suspension is hydropneumatic.

An armored recovery vehicle, outfitted with powerful, special equipment, has been developed based on the Challenger tank and is already being issued.

The British firm "Vickers" has been developing and producing tanks for export over a long period of time. In 1985 the Mk7 Vickers tank was developed in its initial, experimental-model form for sale to other countries. The tank was tested in Egypt the same year. It uses the track chassis of the West German Leopard-2 and a modified turret of an experimental model of the Valiant tank built previously by the same corporation. The Mk7 Vickers tank is outfitted with a 120-mm rifled cannon and a new fire control system manufactured by the Marconi firm.

The Chieftain-900, built by the Vickers firm at the beginning of the 1980's, has remained in its stage of experimental development.

As stated in foreign press reports, tanks in the Federal Republic of Germany occupy an important position in the Bundeswehr's armament scheme. The tank inventory numbers about 4900, of which almost 700 (modernized American M48 tanks) are positioned with territorial troop units. Up to 2500 Leopard-1 tanks of various modification and 1800 Leopard-2's are in the ground forces inventory. A decision was made last year to purchase another 250 Leopard-2 tanks for the Bundeswehr. These will be delivered to the 10th Armored Division to replace the same number of Leopard-1A4 tanks, which are to be sold to Turkey. West Germany has a total of 2050 Leopard-2 tanks in its ground forces.

The first Leopard-1 series tank moved off the assembly line of the Krauss-Maffey corporation in 1965. Foreign experts believe this tank had good mobility but inadequate armor protection.

The body of the Leopard-1 is welded out of rolled armor sheets. The turret is cast. The tank's main armament is the British L7A3 105-mm rifled cannon (with combat load of 60 rounds). A 7.62-mm machine gun is coaxially mounted, and a second of the same caliber is mounted on the turret roof. The gunner has a stereoscopic monocular rangefinder and telescopic sight; the commander has a panoramic sight. The gun's control drives are electrohydraulic.

The engine block includes a 10-cylinder V-shape multifuel MB 838 Ca-M500 engine and ZF 4HP 250 hydromechanical transmission. The engine block can be replaced in 20 minutes. The chassis has torsion suspension. The tracks are rubber-metal. The tank is equipped with filter ventilation system.

West German efforts undertaken to modernize the Leopard-1 tank at the beginning of the 1970's resulted in improved versions as follows.

Leopard-1A1. Mounted on 1845 of these tanks were an armament stabilization system in two planes, thermal-insulated barrel casing for the gun, new rubber-metal tracks, anti-shaped-charge side plates, and equipment to allow underwater operation.

Leopard-1A2 (232 tanks). In contrast to the previous model, the armor of this tank's cast turret was reinforced. The tank had a more effective filter ventilation system and the night vision illumination devices for commander and driver-mechanic were replaced with a non-illuminated variety.

Leopard-1A3 (110 tanks delivered). In addition to the improvements enumerated above, this version has a welded turret with spaced armor protection.

Leopard-1A4 (250 tanks). This version has the same turret as the previous model. It differs chiefly by virtue of a new fire control system which includes electronic ballistics computer, combined (day and night) commander's panoramic sight with stabilized line of sight, and stereoscopic rangefinder.

West Germany is presently modernizing its Leopard-1A1 tanks, converting them to the Leopard-1A5 version. Plans call for delivery of 1300 of these to the Bundeswehr prior to 1992. The main effort here consists of outfitting the tank with more modern fire control system components. It is possible that at some point the 105-mm rifled cannon will be replaced by a smooth-bore 120-mm version.

A family of armored vehicles intended for various purposes has been developed based on the Leopard-1 tank. These include the Gepard self-propelled anti-aircraft system, Roland self-propelled guided missile system, Standard armored recovery vehicle, Biber armored bridgelayer, and Pioneer-Panzer-2 combat engineer tank.

In addition to the Bundeswehr, the Leopard-1 tank (in its various modifications) has the joined the army inventories of Australia, Belgium, Greece, Denmark, Italy, Canada, the Netherlands, Norway and Turkey.

Deliveries of Leopard-2 tanks to the West German ground forces began in 1979. A total of 14 armor brigades have been outfitted with them.

The Leopard-2 has a classical configuration with welded body and turret. The armor is multi-layered, similar to the British "Choban" variety. Anti-shaped-charge plating is mounted on the sides. The tank is equipped with the 120-mm smooth-bore cannon, guidance-stabilized in two planes. Combat load for the gun consists of 42 unit-loaded rounds, fin-stabilized projectiles of two types: armor-piercing sub-caliber with detachable sabot and multi-purpose (shaped charge and HE fragmentation). It is reported in the foreign press that armor penetrability of the first type projectile amounts to 190 mm for a target at a range of 2000 meters and angle of incidence of 60 degrees. A 7.62-mm machine gun is coaxially mounted with the cannon; an anti-aircraft machine gun of the same caliber is positioned above the loader's hatch.

The driver has an EMES-15 binocular sight with built-in laser rangefinder and infrared channel, as well as an auxiliary telescopic sight. The commander uses the PERI-R17 panoramic, periscopic sight with stabilized line of sight. The tank has an electronic ballistics computer and various sensors for non-standard firing conditions.

A 12-cylinder V-shape diesel engine (MB 873 Ka-501), liquid-cooled with turbo-supercharging, is mounted in the tank. The transmission is hydromechanical. The tank has torsion carriage suspension with disk shock absorbers on the first, second, sixth and seventh bogie wheels. It is equipped with a protective system for weapons of mass destruction, automatic fire-fighting system, heating in occupied compartments, and radio communications systems. Provision is made for the use of underwater operation equipment for negotiating water obstacles.

Foreign press reports indicate that the Leopard-2 is also found in the Netherlands ground forces inventory (445 tanks). In 1987, 35 were delivered to Switzerland, where licensed production is to get underway. Plans call for the production of 345 tanks, programmed for Swiss units.

France has about 1300 AMX-30 and AMX-30B2 (the modernized variant—about 300 are provided) tanks in its ground forces inventory. Up to 700 AMX-30 models are planned to be re-outfitted to the AMX-30B2 version.

The AMX-30 was developed at the same time as the West German Leopard-1. Its body is welded out of rolled armor sheets; the turret is cast. Main armament is the French 105-mm rifled cannon, with which a 12.7-mm machine gun (or 20-mm cannon) is coaxially mounted. A

7.62-mm anti-aircraft machine gun is mounted on the commander's cupola. The gun's combat load consists of unit-loaded rounds (47)—shaped-charge, HE fragmentation, smoke and illumination projectiles. The gun has no stabilization system.

The AMX-30 tank is equipped with multi-fuel, 12-cylinder engine and mechanical transmission. It has torsion suspension. The tracks are metal with detachable rubber pads. The tank is capable of overcoming water obstacles by fording (along the bottom). It has a system for protection from weapons of mass destruction, heating unit in the fighting compartment, automatic fire-fighting system, radio. An entire family of various-purpose armored vehicles has been developed based on this tank. The AMX-30 has been provided to the armies of Venezuela, Greece, Spain, United Arab Emirates, Saudi Arabia and Chile.

The AMX-30B2 version differs from the basic model primarily by virtue of its new COTAC fire control system (Conduite de Tir Automatique pour Char) which includes laser rangefinder and electronic ballistics computer. A television system, with camera mounted on the forward right section of the turret, is used for the conduct of fire up to 1000 meters in night conditions. An armor-piercing, sub-caliber projectile was developed for the main gun. The use of hydromechanical transmission and new torsion bars has resulted in increased tank mobility. It is possible that the armor protection of body and turret will be reinforced.

Experimental models of the AMX-32 and AMX-40 tanks (the latter is outfitted with a 120-mm smooth-bore cannon) were introduced at France's annual arms display early in the 1980's. Designated for export, production of these tanks has not yet begun.

France has already built an experimental model of a long-range project, the LeClerc main battle tank (combat mass of about 50 tons) to replace the AMX-30 and AMX-30B2 models in the 1990's. Its body and turret have multi-layer, separated, armor protection. A 120-mm smooth-bore cannon is mounted on the turret, guidance-stabilized in two planes. It uses an automatic loading mechanism (which reduces the crew to three). The combat load is 40 rounds. The fire control system includes a laser rangefinder, electronic ballistics computer, infrared camera and stabilized sights for commander and gunner. The tank has a 1500-horsepower diesel engine.

Italy has more than 1700 tanks in its ground forces, the majority of which are West German Leopard-1's (920) and American M60A1's (300). These come for the most part from licensed production by the Italian corporation OTO Melara. About 500 antiquated American M47 tanks remain in the inventory.

In 1980 OTO Melara developed an experimental model of the OF-40, designated for export. This tank made widespread use of Leopard-1 units and assemblies in its construction, including engine and transmission and the 105-mm cannon. The body and turret are welded. The sides are covered with anti-shaped-charge plating.

In a stage of further development is the OF-40 Mk2, which differs from its predecessor chiefly by virtue of a more sophisticated fire control system, to include a gunner's sight with built-in laser rangefinder and stabilized commander's sight (developed by the French). The main gun is stabilized in two planes. Mounted on the gun camouflage is a television camera system for use when conducting observation from terrain concealment.

According to a report in JANE'S DEFENSE WEEKLY, 36 OF-40 tanks were delivered to the United Arab Emirates.

The Italian corporations OTO Melara and Fiat have formed a consortium for the purpose of developing and producing the C1 main battle tank. Two experimental models have already been built.

The C1 has a classical configuration. Its armor protection is significantly better than that of the OF-40. Its 120-mm smooth-bore gun is guidance-stabilized in two planes. Combat load is 40 rounds. A modern fire control system has been installed. The diesel engine (1200 horsepower) is built in a single block with the automatic transmission. The Italian ground forces command plans to purchase up to 250 of these tanks to replace their aging American M47's.

Japan has developed and produced its own tanks for equipping its ground forces. Most of the approximately 1100 tanks in the inventory are the "74" model. The "61" tank produced in the 1960's is gradually being removed.

The firm Mitsubishi Heavy Industries developed the "74" tank. It is expected that by the end of this year the ground forces will have about 850.

The tank body is welded; the turret is cast. A characteristic feature is the hydropneumatic suspension which changes the ground clearance from 0.2 to 0.6 meter, provides for raising and lowering of the forward or rear tank sections, and provides body tilt to the right or left side. It has a diesel engine.

The "74" tank has the British 105-mm rifled cannon, guidance-stabilized in two planes. The fire control system includes laser rangefinder and electronic ballistics computer. Infrared devices are used for night operations. The tank has a system for protection from weapons of mass destruction. It can negotiate water obstacles up to one meter in depth without any special preparation; greater depths require equipment for underwater operation.

An experimental model of a new main battle tank (currently designated TK-X) was displayed in 1987. It should enter the inventory at the beginning of the 1990's. Multi-layer, separated armor is used to provide enhanced protection. The combat mass is 50 tons. Main armament is the West German 120-mm smooth-bore cannon with automatic loading mechanism. Two machine guns are mounted (7.62-mm coaxial and 12.7-mm anti-aircraft). The modern guidance system includes infrared observation and sighting instrumentation.

The tank's powerful (1500 horsepower) diesel engine provides a maximum highway speed of 70 km/hr. It has a combination suspension: hydropneumatic (for the forward and rear bogie wheels) and torsion.

Israel's ground forces include about 1100 British Centurion tanks, 600 American M48A5, more than 1200 M60A1 and A3, and up to 350 Merkava Mk1 and Mk2 (Israeli produced). The Centurion tanks underwent modernization in the 1970's. The British 105-mm gun was mounted; the American diesel engine and transmission were installed.

The Merkava Mk1 entered the inventory in 1979. It is configured so as to position the engine and transmission compartment in the body's forward section. Israeli experts believe that this type of design, along with the use of combination and separated armor protection for the body and turret, provide maximum protection to the crew members. Additionally, the armored space of the rear body section can be used to place additional ammunition or transport an assault team (of up to eight men).

A 105-mm rifled cannon, guidance-stabilized in two planes, is mounted on a low-profile turret. A 7.62-mm machine gun is coaxially mounted and two others of the same caliber are mounted on the turret roof. The tank has an American diesel engine and hydromechanical transmission. It has an independent, spring-type suspension. Hydraulic shock absorbers are mounted on the forward and rear bogie wheels.

Output production of the modernized version, the Merkava Mk2, was begun in 1983. This model differs from its predecessor by virtue of reinforced armor protection, enhanced navigability and a sophisticated fire control system. The Merkava Mk3, currently under development, is to be armed with the 120-mm smooth-bore cannon, and outfitted with a multi-fuel, 1200-horsepower engine and hydropneumatic suspension.

The ground forces tank inventory of Sweden consists of about 340 antiquated British Centurion and 330 STRV-103B tanks (developed and produced by Sweden).

A characteristic design feature of the STRV-103B is its lack of turret and rigid mounting of the main gun to the body. This results in a lowered silhouette and provides increased protection through the large slope angle of the upper frontal armor plate. However, this type of design does not permit precision fire on the march. In the horizontal plane, the main gun is aimed by rotating the body; in the vertical plane—by raising and lowering the forward or rear body sections using the hydropneumatic carriage suspension. The 105-mm rifled main gun (based on the British L7A1, but having an elongated barrel) has a combat load consisting of armor-piercing sub-caliber, shaped-charge and smoke projectiles, as well as shells with plastic explosive. The commander and gunner have periscopic sights.

The STRV-103B employs a combination propulsion system that includes both diesel and gas turbine engines. The latter kicks in for movement under adverse road conditions and is also used to start up the diesel engine, especially in winter. The propulsion system and hydromechanical transmission unit are constructed in a single block and located in the forward body section.

In 1986 the ground forces began accepting deliveries of a modernized version of this tank, designated the STRV-103C. A bulldozer blade is mounted on the forward lower body section and fuel tanks are appended to the sides (which serve as side plating and increase cruising range). A double-barreled grenade launcher is mounted behind the commander's cupola and intended for firing 71-mm illumination grenades. The fire control system includes a new gunner's sight with built-in laser rangefinder and electronic ballistics computer.

The tank inventory of Switzerland's ground forces numbers about 870, of which 300 are antiquated British Centurions, 150—the Pz61 (produced in the 1960's) and 390—the Pz68. Delivery of 35 West German Leopard-2 tanks was made in 1987; another 345 are to be license-manufactured.

The main battle tank of Switzerland today is the Pz68. The Leopard-2, redesignated the Pz87, will assume this role in the future.

The Pz68 tank entered the inventory during the 1970's. In practical terms this was a further development of the Pz61. The body and turret are cast. The British 105-mm rifled cannon is guidance-stabilized in two planes. A 7.5-mm machine gun is coaxially mounted; another of the same caliber is mounted above the loader's hatch. The West German MB 837 diesel engine is installed in the Pz68.

In recent years Brazil has joined the circle of countries which produce armored military equipment. Along with production of light armored vehicles and the modernization of antiquated American tanks, Brazil is developing a main battle tank. The ENZHESA corporation has already built two experimental models of the EE-T1 "Ozorio" tank, which underwent testing in Saudi Arabia in 1985-1986.

The turrets of this tank were manufactured by the Vickers firm. The L7A3 105-mm rifled cannon (combat load—45 rounds) is mounted on one, and the French 120-mm smooth-bore gun (40 rounds), on the other. The fire control system includes combination (day and night) periscopic sights for gunner and commander and a laser rangefinder built-in to the gunner's sight. Multi-layer armor is used in the forward body section. The West German 12-cylinder diesel engine and hydromechanical transmission are constructed in a single block. The carriage suspension is hydropneumatic.

"Beriardini," another Brazilian firm, has developed the MB-3 "Tamoyo" tank (with combat mass of about 30 tons), based on the American M41 light tank. The Tamoyo is armed with a 90-mm rifled cannon and has a 500-horsepower diesel engine. The corporation has already received a production order for 50 of these tanks, to be delivered to the ground forces.

In South Korea the American M48A5 (950 tanks) comprises the core of the ground forces tank inventory. In addition, about 350 antiquated M47 tanks remain.

In 1983 the American corporation General Dynamics built two experimental models of the XK-1 tank for the purpose of subsequent production in South Korea and delivery to the Korean ground forces (plans call for about 700 tanks). The XK-1 design incorporated elements of earlier-produced American and West German tanks. The body and turret have multi-layer armor. The main armament is the 105-mm rifled cannon. The fire control system was developed by the Hughes Corporation.

The American AVCR-1790 diesel engine and West German RK-304 hydromechanical transmission are installed in experimental models of the tank. Series production tanks contain the West German MB871Ka-501 diesel and ZF LSG3000 automatic transmission. The tank carriage has a combination suspension: hydropneumatic for the forward and rear bogie wheels, torsion for the remainder.

It can be readily seen from the foregoing that the armies of the capitalist countries, primarily the member nations of the aggressive NATO bloc, have a significant number of tanks which maintain, as before, their role as the main striking force of the ground forces. In addition to increased numbers of tanks in the inventories of these countries, measures are being undertaken to qualitatively improve them through modernization of existing tanks and their replacement with versions possessing better combat characteristics.

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The United States Air Force Strategic Air Command

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[Article by Colonel V. Kirsanov: "The United States Air Force Strategic Air Command"]

[Text] The course of foreign policy being pursued today by U.S. militaristic and imperialistic circles is characterized by a striving to destroy at any cost the military-strategic parity which exists and attain military superiority over the Soviet Union. In complete harmony with this policy the United States armed forces are being built and shaped to conduct wars diverse in scope, duration and intensity—from wars using only conventional means of destruction to protracted nuclear war. The Western mass media stress that the main component of these armed forces remains, as before, U.S. strategic offensive forces, capable of guaranteeing "deterrence" against a potential enemy. Such forces include land-based intercontinental ballistic missiles (ICBMs), nuclear ballistic missile-carrying submarines, and strategic aviation. These components form the so-called American strategic triad.

Based on data published in the foreign press, this article examines the organization, composition, combat readiness and outlook for long-term development of the Strategic Air Command (SAC) of the United States Air Force, which encompasses two components of the triad—ICBMs and strategic aviation.

Organization and combat composition. The Strategic Air Command is a special command of the American armed forces which has at its disposition forces and assets designed to inflict strikes against the most important facilities of an enemy's military and economic potential, first and foremost in an all-out nuclear war. American experts believe that SAC strategic aviation will accomplish the following combat missions in a conventional war: aviation support of troops in the theater of combat operations, conduct of air strikes in support of rapid deployment forces, conduct of air reconnaissance—to include in maritime theaters, engagement of enemy surface vessels, minelaying, and in-flight refueling of aircraft belonging to other air commands. For administrative matters related to the organization of combat training, maintenance, logistics support and cadre training, SAC is subordinate to the U.S. Air Force Chief of Staff. With respect to operational concerns, as an extremely important component of the strategic triad, SAC is subordinate to the Joint Chiefs of Staff of the U.S. armed forces. SAC organizational structure is as shown in Fig. 1.

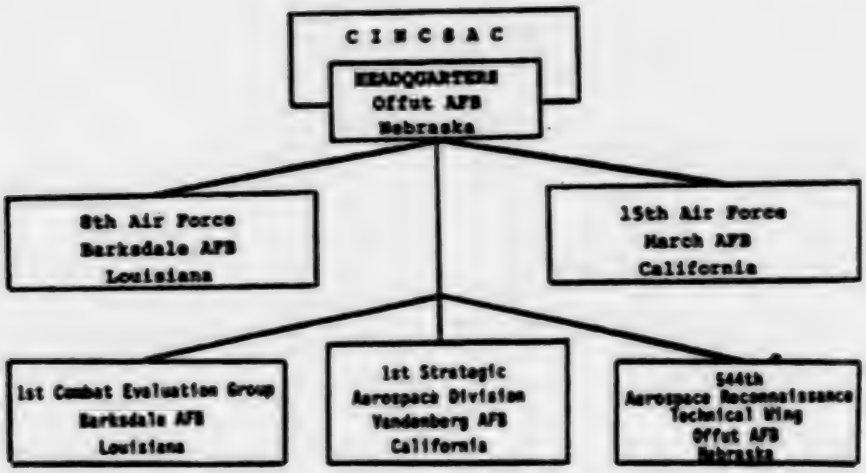

FIGURE 1 Organization of the Strategic Air Command

The Strategic Air Command is headed by a commanding general appointed for a two-year period. Upon completion of two years in the post, he may retain his position another two years. In this event, however, he is subsequently required to move to another post, usually a more responsible one, or retire.

General John Chain has served as SAC Commander-in-Chief (CINCSAC) since 1986. Through his headquarters and staff he directs all activities of subordinate units. Located at Offut Air Force Base, Nebraska, SAC headquarters occupies a three-story building, the underground spaces of which contain the SAC command post, communications center and automated command and control center. An extremely important element of this command post is an underground combat direction center, situated at a depth of 14 meters, where all information is accumulated with respect to the state of readiness of SAC units, operational status of missiles and aircraft, current coordinates of bombers in flight, estimated time required to reach their targets and meteorological conditions in various regions of the globe. From this combat direction center CINCSAC duplicates the commands of the Chairman Joint Chiefs of Staff which, in accordance with the U.S. President's decision, are sent to ICBM launch control points and to the command posts of aviation bomber squadrons to effect launch of the ICBM force and dispatch of strategic bombers carrying nuclear weapons. In the event it is impossible to direct the ICBM and bomber force from this command post, the function is assumed by one of the airborne command posts.

SAC personnel strength numbers 106,600 servicemen and 12,000 civilians.

SAC forces and assets are divided organizationally into two numbered air forces—the 8th and 15th, with headquarters at Barksdale Air Force Base, Louisiana, and March AFB, California, and the 1st Strategic Aerospace Division at Vandenburg AFB, California. In addition, SAC has separate units and organizations, for example, the 544th Strategic Reconnaissance Air Wing and the 1st Combat Evaluation Group.

The 8th Air Force includes the 7th, 19th, 40th, 42d and 45th air divisions. The 15th Air Force contains the 3d, 4th, 12th, 14th and 57th air divisions. Up to three air wings comprise a division. There are three composite divisions (4th, 19th and 57th) which include missile wings in addition to air wings.

The 3d Air Division of the 15th Air Force contains strategic aviation units based in the western Pacific; the 7th Air Division of the 8th Air Force contains similar units deployed in the European zone. The headquarters of the 3d and 7th air divisions exercise direct control over all matters governing the activity of their organic subordinate units, as well as units stationed temporarily in their zones of responsibility (during exercises, for example).

The 1st Strategic Aerospace Division is tasked with the following missions: personnel training and readiness in ICBM units, the conduct of space missile technology testing, and the organization of missile test range activity. To accomplish these tasks the division has the 394th ICBM Technical Maintenance and Testing Squadron and the 4315th Missile Unit Training Squadron.

SAC has six strategic missile wings in all. Each wing has three or four squadrons of 50 launchers each. All are deployed at bases located in the continental United States. Details with respect to the organization and composition of the 8th and 15th Air Force are as shown in figures 2 and 3.

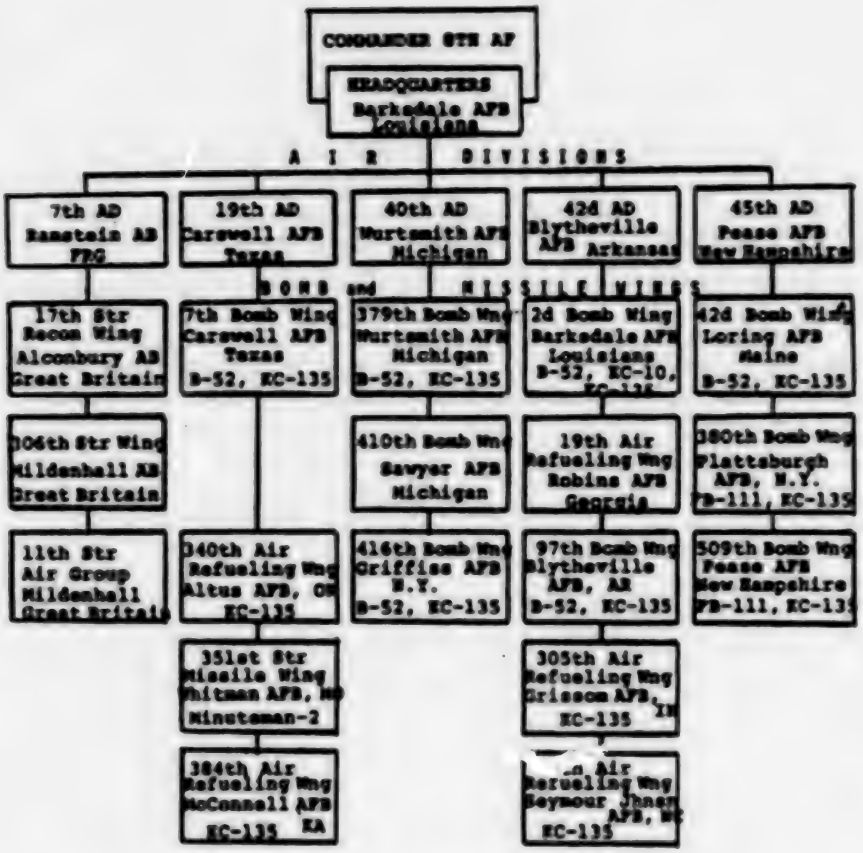

FIGURE 2 Organization of the 8th Air Force (SAC)

Depending on the type of aircraft in their inventory, air wings are divided into categories of heavy bomb wings, medium bomb wings and air refueling wings.

Each bomb wing has one or two bomber squadrons (B-52, B-1B or FB-111) and one or two air refueling squadrons (KC-135 or KC-10). Each reconnaissance wing contains one or two reconnaissance aircraft squadrons and one refueling squadron. The air refueling wing consists of one or two tanker squadrons.

Headquarters of strategic air wings and groups, along with their support units, have been formed to direct strategic air operations in forward theaters of combat operation. Subordinate to them are strategic bomber, reconnaissance and air refueling units deployed from CONUS for the execution of specific missions.

According to foreign press reports, SAC's major active forces and assets are located in peacetime at 28 missile and air force bases throughout CONUS and on 10 air bases in the territory of other countries. Additionally, based on bilateral treaties and agreements with many other governments, the United States is able to utilize dozens of overseas air bases for positioning groups of strategic air assets.

In all, according to data published in the Western press, SAC's combat assets comprise 1362 strategic nuclear weapons carriers (1010 ICBMs and 352 bombers), including 540 Minuteman-3, 450 Minuteman-2 and 10 antiquated Titan-2 ICBM launchers (the latter are being removed from the inventory). At the end of the 1970's, 300 Minuteman-3's were outfitted with new Mk12A warhead compartments, each of which contains three enhanced-yield warheads (these missiles were designated Minuteman-3J). In addition, 10 new MX ICBMs entered the SAC combat inventory. Efforts are currently underway to prepare and deploy another 40 MX missiles in modernized Minuteman-3 silos. It should be noted that over 90 percent of the ICBM force is on constant combat alert.

SAC's strategic combat aviation units (to include active reserve) consist of 263 B-52 and 28 B-1B heavy bombers, and 61 FB-111 medium bombers. Up to 30 percent of

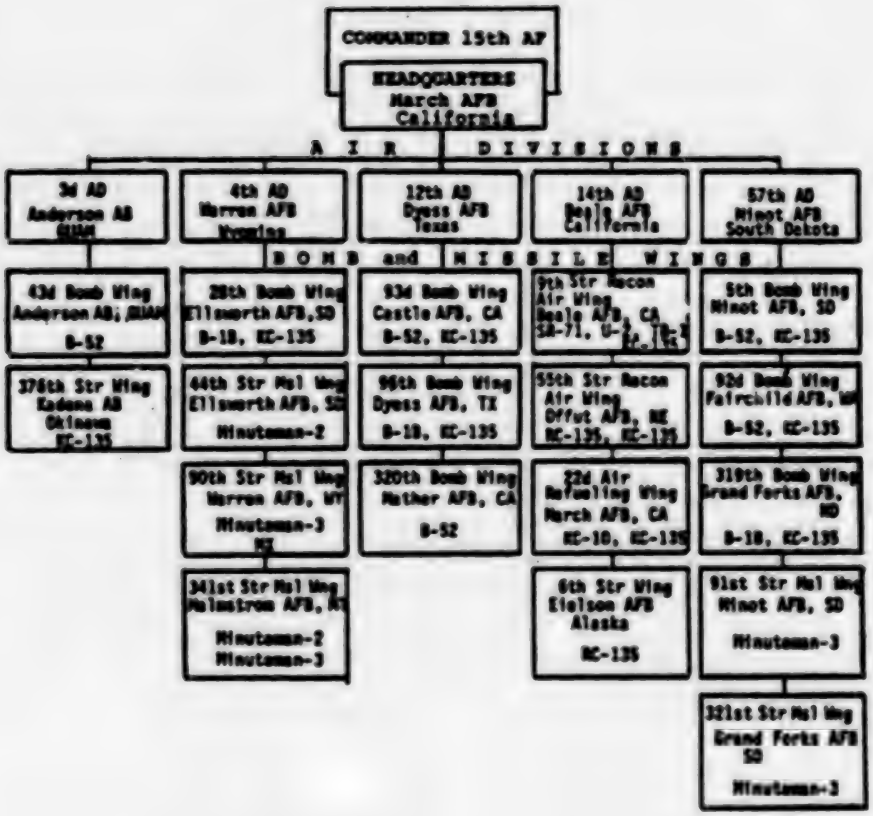

FIGURE 3 Organization of the 15th Air Force (SAC)

the bomber force is always prepared to take off upon sounding the alarm. In the nuclear mode these aircraft are capable of carrying air-ground AGM-86B cruise missiles and AGM-69A guided missiles (with basic features as shown in Table 2), as well as nuclear bombs of various yields. When conducting combat operations using conventional weapons, depending on the nature of the mission, a variety of bombs, cluster bombs, sea mines and other weapons can be suspended from the aircraft with total weights as follows: B-1B—up to 57 tons, B-52D—31 tons, B-52G—30 tons, B52H—23 tons, FB-111—14 tons.

In addition to its bomber force, SAC has about 40 RC-135, SR-71 and U-2 strategic reconnaissance aircraft, 487 KC-135 tankers (an additional 128 of these aircraft belong to national guard and air force reserve units), about 50 KC-10 tanker transport aircraft and 25 EC-135 and E-4 aircraft of the emergency combat direction system, to which the National Military Command Center, Joint Chiefs of Staff, Strategic Air Command, airborne ICBM control posts and communications relay aircraft are tied in.

SAC combat training is aimed towards maintaining its missile and aviation components at a high state of combat readiness. According to foreign military experts, this is accomplished through precisely organized daily combat training, effective use of technical auxiliary equipment (various trainers and simulators play an important role), and frequent participation of ICBM and strategic bomber crews in various exercises and competitions.

Missile wing personnel undergo preliminary training at specialized primary training schools of the U.S. Air Force Air Training Command, then are assigned to training units of the 1st Strategic Aerospace Division, Vandenburg AFB, California, where they regularly participate in training sessions and scheduled exercises, study the combat equipment and perfect the skills of its employment. Each combat crew undergoes a minimum of three unannounced evaluations per month which test their knowledge of the pre-launch operations sequence and ability to properly execute it. A score of 100 percent must be obtained in one of the evaluations, at least 90 percent in the remaining two. In the event these requirements are not met, the crew is removed from combat alert status and must undergo additional training.

American military publications note that an important role in maintaining the high level of professional readiness among missile unit personnel is played by annual

competitive exercises conducted at Vandenburg AFB. Participating combat crews and technical missile maintenance teams compete in the execution of a number of exercises consisting of operations related to their normal, everyday operations. here they are required to function under conditions of critical time shortage, simulated emergency situations, accident occurrence, or critical equipment malfunction. The competition is conducted, as a rule, using simulators. This enables control and monitoring of practically every pre-launch operation to be exercised, right up to the final countdown prior to launch. Simulators allow SAC to reduce the number of actual ICBM launches to a minimum, thus significantly decreasing crew training expenditures.

Combat readiness training for strategic aviation unit personnel consists of three main elements: academic course work and systematic flight training, on both an individual and group basis (as part of their regular assigned crew), leading to mastery of flight technology and the skills necessary to operate on-board equipment; systematic training on simulators; participation in exercises and competition. As a rule, B-52 bomber crews fly at least two missions per week. A typical B-52 training mission lasts 10 hours, B-1B mission—6 hours.

U.S. Air Force training of flight crews and technical maintenance personnel, including those in strategic aviation, in recent years is characterized more and more by the use of a variety of simulators. Of special importance in this regard are the so-called weapons system simulators which enable comprehensive, integrated training of all crew members in an environment approximating to the greatest possible extent that of an actual combat mission. Such simulators can approach costs of tens of millions of dollars and are being developed for every specific type of bomber. The integrated "flight" of a B-52 crew in such a simulator lasts about four hours and incorporates practically every main element of actual flight. In 1983-1985 the U.S. Air Force purchased nine integrated simulators for SAC. Three similar training simulators were installed at Plattsburgh AFB, New York, at the end of the 1970's for training FB-111 pilots and navigators.

With the advent of the B-1B bomber, requirements which must be met by future simulators have grown more exacting. The American publication DEFENSE ELECTRONICS wrote in this regard that the use of highly advanced technology in modern electronic systems in designing the B-1B bomber necessitates the use of simulators which are at least as sophisticated in the training of pilots, operators of on-board electronics systems, and technical maintenance experts. In order to solve this problem, plans call for the purchase of five, very complex, integrated simulators to be used in joint training of all crew members, several othersspecialized for certain flight-crew tasks, and four simulators for retraining purposes and for training technical maintenance specialists. As reported in the American press, preliminary estimates of acquisition costs for just the first type of simulator will reach at least 350 million dollars. The U.S. Air Force finds such expenditures acceptable, however, insofar as the simulators will enable crews to exercise practically every phase of the mission, to include take-off, air-refuelling, penetration of enemy air defenses at low altitudes, employment of weapons and electronic warfare equipment and, finally, return to the airfield, approach for landing and landing. This will enable the requisite level of flight-crew professional training to be maintained with minimal expenditures associated with combat aircraft use and fuel resources, etc.

The highest level and most complicated form of SAC combat training consists of regularly scheduled competitive exercises conducted on various levels and for a variety of purposes. In this regard, as noted in the foreign press, there has been a distinct tendency in the past five-seven years to increase not only the number of exercises in which strategic bombers and tankers participate, but the number of aircraft committed to them as well. Moreover, we see ever more widespread participation of strategic bombers in exercises conducted jointly with tactical aviation, the army and the navy, to include exercises conducted in remote theaters.

In particular, the Red Flag exercises of the U.S. Air Force Tactical Air Command regularly conducted at the test range at Nellis AFB, Nevada, have involved not only strategic B-52 bombers in recent years, but other SAC aircraft as well, including SR-71 and RC-135 reconnaissance aircraft and tankers.

Groups of B-52 bombers deployed to Europe within the framework of the Busy Brewer exercise participate, as a rule, in the NATO combined forces exercises Central Enterprise, Display Determination and Cold Fire, components of NATO's large-scale Autumn Forge maneuvers. SAC aircraft regularly take part in the annual Team Spirit exercises conducted jointly by the United States and South Korea, which exercise not only the conduct of strikes against ground targets, but also involve laying minefields in the coastal waters of the Korean Peninsula. B-52 and FB-111 bombers participate in Maple Flag exercises, integrated with tactical fighters of the Canadian and British air forces, along with U.S. Air Force TAC and military transport aircraft.

The heaviest contingents of strategic air and ICBM assets participate in SAC's annual Global Shield exercises, which have been conducted since 1979. These exercises evaluate the operational plans for combat employment of SAC forces and resources, and practice measures for the dispersal of dozens—in some instances hundreds—of strategic bombers and tankers on emergency airfields, which would take place during a period of sharply exacerbated international tension. They exercise the ability of B-52 crews to maintain in-flight alert

status and employ nuclear weapons. They exercise Minuteman ICBM launch procedures, simulating the infliction of massive strikes against the enemy. Even the Western press notes that Global Shield exercises comprise nothing less than a rehearsal for the outbreak of all-out nuclear war.

SAC—future prospects. As noted in the foreign press, the SAC ICBM force will further increase its combat capabilities primarily within the framework of a deployment program for another 50 MX missile launchers, each of which is capable of carrying up to 10 600-kt warheads. Plans call for assembly of these launchers on special railroad platforms which, under normal conditions, will be located on military bases. When necessary, however, they will be relocated onto the country's regular railway network and will move along that network according to a specially drawn up schedule which, in the opinion of American experts, will make it exceedingly difficult for the enemy to find and destroy them.

At the same time, the United States has been working since 1983 on the development of a new, highly accurate, mobile ICBM, the Midgetman, a project in which the Pentagon has already involved up to 30 diverse contracting firms. U.S. Department of Defense plans call for the deployment, beginning in 1992, of from 500 to 1000 such missiles, each carrying a monoblock warhead with yield on the order of 500 kt.

As stated in foreign press reports, the growth of combat capabilities in strategic aviation is taking place through the replacement of existing aircraft by the new B-1B bomber, series production of which has been underway since 1982. The Pentagon intends to acquire 100 of these aircraft in all by mid-1988. Each B-1B can carry SRAM guided missiles, nuclear and conventional bombs, air-launched cruise missiles of existing and future varieties.

It is planned at the same time to extend modernization of the B-52H bombers to enable them to carry up to 12 cruise missiles. In all, by the end of this decade SAC is programmed to have 194 cruise missile-carrying B-52 bombers (more than 130 of these have already been re-outfitted in this regard). The entine B-52 re-outfitting program is expected to be completed by the fall of 1993.

SAC plans call for the purchase of 104 all-purpose, rotor, intra-fuselage launchers which, according to FLIGHT magazine, can be used not only on the B-52H, but also on the B-1B and, in future, on the bomber under development which the Western press has called the Advanced Technology Bomber (ATB), or "Stealth." Foreign press reports state that this new launcher equipment will be able to include as payload currently existing varieties as well as those under design of cruise and guided missiles, nuclear and conventional bombs, cluster bombs of various types and sea mines.

U.S. long-range development of the Stealth bomber has been underway since October 1981, parallel with deployment of the B-1 and the re-outfitting of B-52 aircraft with cruise missiles. As reported in the Western press, the new bomber is apparently being constructed in a "flying wing" design and will be capable of carrying a combat load of up to 18 tons with take-off weight of 180 tons. Deliveries to SAC of the first series production aircraft of this type are scheduled to begin in 1992-1993. It is planned to construct 132 of these aircraft, of which 120 will be deployed to combat units and 12 maintained in the active reserve. In addition, modernization of the FB-111 medium strategic bomber is presently taking place. New on-board radar systems, highly accurate navigation and bombing systems, etc., are being mounted. American experts believe all of this will expand the combat capabilities of the aircraft and enable its employment under all meteorological and geographical conditions. In this regard, it is planned to install equipment which will allow the crew to make prolonged flights at very low altitudes, closely following terrain features. As the new ATB bombers enter the SAC inventory, however, the FB-111 aircraft are intended to be relegated chiefly to a role of providing aviation support to ground forces in the European theater.

Along with developing and improving its strategic aircraft inventory, SAC is constantly increasing its strike potential, equipping its bombers with new and more sophisticated types of missiles. No sooner had 1715 AGM-86B cruise missiles been delivered in October 1986, than the U.S. Air Force appropriated funds for development and acquisition of a more sophisticated, second-generation cruise missile—the Advanced Cruise Missile (ACM), which should have a greater firing range and better accuracy than the AGM-86B. In addition, the SRAM-2 guided missile is under development for the B-1B and ATB bombers. By the middle of the next decade it is planned to obtain a total of up to 1300 Advanced Cruise Missiles and about 1600 SRAM-2.

AIR FORCE magazine notes that, along with the development of bomber aviation, the U.S. Air Force is in no way neglecting its tanker aircraft. Improvements are being made in air refuelling aircraft through modernization of the KC-135 and delivery of new KC-10 tanker transport aircraft to the units. New CFM56 engines are being mounted on KC-135A aircraft and about 25 percent of the various on-board systems components are being replaced. The modernized aircraft (designated KC-135R) can take significantly more fuel on board. In addition, fuel expenditure has been lowered significantly and technical maintenance and repair simplified. The first KC-135R aircraft entered the SAC inventory in 1984. In all, a total of 338 aircraft are expected to undergo modernization by 1990. Plans call for the modernization of 128 tankers in Air National Guard and U.S. Air Reserve units. These will be re-outfitted with the more economical JT3D engine, and will then be redesignated KC-135E. In addition, work is being done on all KC-135 tanker aircraft to enhance durability of the

most important construction components and the skin is being partially replaced. American experts believe these efforts will allow the aircraft to remain in the inventory beyond the year 2000.

Deliveries of the new KC-10 tanker transport aircraft to SAC units began in March 1981. Each of these aircraft has three times the air refuelling capability of the KC-135A and, at the same time, can transport a significant amount of cargo and personnel to remote regions of the globe. The U.S. Air Force has, for now, appropriated funds for the purchase of 60 of these aircraft, of which 58 are projected for line units by the beginning of 1988.

In the opinion of Western experts, full implementation of the above-mentioned plans, to be realized within the framework of the comprehensive modernization program for strategic offensive forces declared in 1982, will entail not only significant replacements of the strategic aviation and weapons inventory, but also a certain redistribution of combat missions assigned to various types of bombers with different weapons and different technical/flight characteristics. In this regard, AIR FORCE magazine stated that, considering U.S. strategic air capabilities to be entirely effective as a nuclear deterrent, high-ranking Pentagon officials have lately been paying increased attention to drawing up plans for the employment of SAC bombers in wars where only conventional weapons are used. For this SAC intends to acquire highly accurate medium and long-range conventional weapons, develop new tactical procedures and methods for employing these weapons and, finally, organize the appropriate training for flight crews and technical maintenance personnel. It is emphasized in this regard that now more than ever American commanders of major U.S. Army units are striving to deeply involve strategic bombers—with great cruising range and armed with effective non-nuclear weapons—in providing air support and inflicting strikes on second-echelon enemy forces, as well as sealing off areas of combat operations.

It follows from what has been presented above that the present condition, armament and disposition of U.S. Air Force SAC units, as well as the orientation and nature of the training they conduct, are clearly offensive and aggressive in their nature. SAC personnel have always demonstrated a readiness to obey without hesitation any and every order issued by the Pentagon—no matter how notoriously senseless or monstrously dangerous it may be when one considers the possible consequences. We cannot help but be reminded of the fact that the first two atomic bombs—which annihilated thousands of people in Hiroshima and Nagasaki—were dropped by crews from an American B29 bomber, the aircraft which, less than a year later, came to comprise the core of SAC's strategic air inventory and which became for many years—and remains today—the main instrument in forging a policy of nuclear blackmail.

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Increased Reliability for Radio-Electronic Equipment Used in Aviation

18010301g Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 1, Jan 88 (signed to press 7 Jan 88) pp 49-52

[Article by Colonel D. Figurovskiy, candidate of technical sciences: "Increased Reliability for Radio-Electronic Equipment Used in Aviation"]

[Text] Attention in the United States has been fixed in recent years on enhancing the reliability and maintainability of weapons and combat equipment, a factor which the foreign press explains basically as follows. First and foremost it is due to changing views of the NATO military military leadership as to the possible nature of the initial period of combat operations in the European theater which, it is supposed, may continue without the use of nuclear weapons for a significantly longer period of time than was earlier believed. Under such conditions, therefore, it will be impossible, or at least exceedingly difficult, to organize the higher echelon repair of military equipment which becomes non-operational due to inadequate reliability. In addition, requirements for transporting spare parts and repair equipment from CONUS by air will reach unacceptable proportions.

A second reason is considered the negative influence of scientific and technical progress on the reliability of prototypes under development. The complexity of radio-electronic equipment used in the aviation industry today is increasing at such a rate that the level of personnel training cannot keep up with it. Repair is becoming increasingly expensive and requiring more sophisticated and expensive instrumentation to accomplish it. Finally, another contributing factor is insufficient attention on the part of the corporations which develop and manufacture military equipment to matters of reliability. Such firms often treat client requirements superficially and spend time and effort in this regard only under the pressure of competition, during the competitive bidding for new development.

After conducting a study and analysis of the factors outlined above, the U.S. Air Force concluded at the beginning of the 1980's that the issue of reliability and maintainability had reached a critical level and that it would be necessary to develop and implement an urgent, special program encompassing all aviation systems and equipment in order to correct it. Named "Reliability and Maintainability 2000," this program was expounded in 1984 in a joint memorandum issued by the Secretary of the Air Force and Air Force Chief of Staff, and was addressed to all major air force commands. Its major provision, as noted in foreign press reports, is a fundamentally new approach to evaluating priorities among reliability indices as they relate to other tactical/technical characteristics of weapons and equipment types.

The document states that all air force agencies are responsible for the purchase, repair and operation of aviation equipment. They must look at reliability and maintainability as basic factors not subject to compromise which directly influence the combat effectiveness of weapons systems and, in the final analysis, determine to a significant extent their ability to accomplish the combat mission. According to an official U.S. Air Force representative, the present need to insure a high degree of reliability prior to accepting weapons and equipment is not merely a request of concerned enterprises, but is our ultimatum.

Several factors reported in the foreign press indicate that this approach to the reliability problem is already being pursued. Series production of the LANTERN sighting-navigation system developed by the Martin-Marietta corporation was delayed because of inadequate reliability alone—the product distinguished itself by a high degree of effectiveness in all other areas. A yet more severe decision was handed down with respect to the AN/ALR-74 detector-receiver manufactured by the Litton firm, for which the competitive bidding process was resumed anew, i.e., it was necessary to return to the very earliest stage of development from being ready to commence series production.

The following aspect of the program has received special attention in the Western press. In the event a conflict arises when developing a prototype between reliability requirements and enhancement of other features (even such extremely important characteristics as operating range and combat payload) there is the possibility that preference will be shown to the increased reliability. A number of examples are offered to support the correctness of such an approach.

The duration of a typical FB-111A combat sortie (variable flight profile with in-flight refuelling) is 12 hours, and mean-time-between-failures of its aiming-navigation system is 4.2 hours. American experts believe that such equipment reliability makes it practically impossible to expect the aircraft to reach its target without some kind of fault or malfunction occurring here, which could lead to failure to accomplish the combat mission, even in the absence of enemy countermeasures, or would at least result in a decrease in number of bombs precision guided to target. If the mean-time-between-failures is increased by a factor of about four, there will be a greater degree of probability for combat mission success and, according to calculations, the bomb will strike the target 29 percent more often.

Another example examines the advantages of doubling radio-electronic equipment reliability and that of the electric power supply in the F-16 "Fighting Falcon." It is believed that were the desired degree of reliability achieved, the cost of aircraft spare parts would be reduced 45 percent and the number of personnel required to be engaged in operation and repair of this equipment would be reduced by 40 percent. In addition, when an F-16 fighter squadron is redeployed, fewer C-141 transport sorties (30 percent less) are required to transport spare parts and supplies.

According to foreign press reports, plans to incorporate these changes with respect to reliability of aircraft radio-electronic equipment have been assigned top priority. It is emphasized that no special basic research will be required to accomplish these plans, nor will it be necessary to develop and assimilate fundamentally new technological processes. It will be sufficient to utilize items and methods already available (ring laser gyroscopes, for example, having mean-time-between-failures of 10,000 hours instead of the regular electromechanical variety, which are one-fifth as reliable), or abandon traditional equipment design approaches (for example, switch from horizontal to vertical assembly of printed circuit boards). In addition, in modernizing the on-board equipment of aircraft presently in the inventory, the use of super-high-speed integrated circuits is considered premature, insofar as industry has not yet fully assimilated their series production. Such circuits will be mandatory in future stages of program implementation and American experts believe this will result in at least a ten-fold increase in the reliability of aircraft radio-electronic equipment.

The new program differs from measures previously undertaken in the United States to enhance reliability in the significant respect that new standards have been developed and implemented, providing for increased overall protection for components, units and assemblies from the effects of external factors. First and foremost these include temperature differentials and loads resulting from shock and vibration. A fundamentally new aspect of these standards can be seen in the requirement to conduct operational and climatic testing on an integrated systems basis, and not merely with respect to separate components. In this regard, testing conditions for high and low temperatures are relaxed somewhat, as shown in the table (temperature range determined by military standards currently in effect: from -55 to +125 degrees Celsius).

The following examples from Western press reports show the necessity to effect transition to the new testing methods.

In 1985, at the Ogden Air Logistics Center, Hill AFB, Utah, experts examined the frequent failure of voltage regulators on the instrument panel of the F-4 aircraft. They decided to subject all voltage regulators to a series of integrated systems tests to check the effect of vibration along three axes, with a g-load factor of up to 25, quasi-random frequency spectrum response in the 40-2000 Hz range, and with simultaneous surrounding-temperature fluctuation within the limits -60 to +125 degrees C. Of 101 units tested, one or more faults were discovered in 82, the basic cause of which was low quality in connectors and coupling devices.

Another example is cited which quantitatively evaluates the influence of this systems testing on increased reliability for on-board systems. The AN/ARN-84 aircraft navigation radar manufactured by Gould Electronics had a mean-time-between-failures of 50-200 hours. After systems testing of radar assemblies was introduced this factor changed to 1000-2000 hours.

Based on such data the U.S. Air Force concluded that the conduct of systems tests for components and assemblies can increase the reliability of radio-electronic equipment tenfold on the average. The decision was made, therefore, beginning in October 1986 to authorize production of only those parts and components whose systems tests resulted in a fault/malfunction frequency of not worse than 1000 in 1,000,000 tests. It has been reported that after October 1989 this requirement will become 10 times more stringent.

Practical implementation of changes envisioned by the program in the organization of operations, maintenance and repair of aircraft equipment is already underway in U.S. Air Force Logistics Command units. The foreign press has noted that these changes will result in an increased survival rate in the maintenance and logistics sphere, simplification of mobility requirements for deployed forces, reduction in the number of combat unit personnel required for equipment servicing, and decreased costs in work performed. The importance of these changes to the logistics command will be further explained.

According to official sources, the U.S. Air Force Logistics Command is responsible for obtaining materiel from industry and providing for its repair, production, modernization, and distribution among the major air force commands. It maintains close ties with trade and industrial enterprises. In 1985 the Logistics Command concluded contracts totalling 13.2 billion dollars, of which about 60 percent was spent for spare parts and the remainder comprised expenditures for equipment modernization, preventive maintenance, etc. Expenditures for radio-electronic equipment work are believed to exceed 6 billion dollars.

The main portion of U.S. Logistics Command activity is accomplished at five maintenance, repair and logistics centers: Ogden (Hill AFB, Utah), Oklahoma (Tinker AFB, Oklahoma), Sacramento (McClellan AFB, California), San Antonio (Kelly AFB, Texas) and Warner Robins (Robins AFB, Georgia). Each of these centers specializes in the technical servicing of specific weapons systems and equipment. Western press reports cite the changes in organization of operations, maintenance and repair which took place at the Ogden center within the framework of implementing the program. Essentially, these consist of locating the administrative control apparatus as close as possible to the work place where personnel are directly involved with the equipment. With this in mind, the center's control agencies were relocated from separate buildings to the hangars. This facilitated their direct contact with technical engineering personnel, streamlined production methods, simplified documentation and improved the process of timely decision-making. Center activities are not limited to maintenance and repair—its production capapabilities are being increasingly utilized. In particular, production was set up for a small quantity of printed circuit boards of varieties not yet produced by industry to repair aging radio-electronic equipment still in the inventory. The relatively inexpensive cost of this production is emphasized (as compared with what it would be if ordered from the industrial sector) and, most importantly—the high reliability and quality of the product.

The measures discussed above comprise only the initial stage of implementation of the program to enhance reliability and maintainability, generally estimated to remain in effect until the year 2000. As far as the distant future is concerned, the U.S. Air Force has the task not only of increasing the reliability of aircraft weapons and equipment, but also of significantly facilitating the repair and replacement of malfunctioning units. According to foreign press reports, attempts will be made to achieve this in the following ways.

It is planned, first of all, to substantially simplify systems and equipment by reducing their number of component parts and connecting/coupling elements, and by reducing the requirement for specialized instruments and devices.

Secondly, it is planned to develop new, so-called "unidimensional" design principles, which will obviate the need to remove one functional unit or another in order to provide access to the component to be serviced, repaired or replaced.

Thirdly, new development will involve only that equipment which does not require personnel retraining when each new type enters the inventory.

Fourthly, the capability of eliminating malfunctions by replacing individual modules without having to shut down the entire piece of equipment must be insured.

U.S. Air Force Experts believe that full implementation of the program outlined here will eliminate the need for intermediate maintenance and repair agencies, sharply reduce the number of personnel required at maintenance/repair centers, and increase to ten the number of combat sorties for tactical fighters without the incidence of any malfunctions resulting from inadequate reliability of its radio-electronic equipment.

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Tactical and Technical Characteristics of Major Combat Aircraft in the Air Forces of the Capitalist Countries

18010301h Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 1, Jan 88 (signed to press 7 Jan 88) pp 53-58

[Article by Colonel I. Chistyakov: "Tactical and Technical Characteristics of Major Combat Aircraft in the Air Forces of the Capitalist Countries"]

[Text] The following tabulated data pertains to aircraft in the air force inventories of the capitalist countries. For information on the combat composition of these forces, see ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, 1987, No 1, pp 51-56 and 1987, No 2, pp 56-58.

AIRCRAFT NAME and DESIGNATION; DEVELOPING COUNTRY	Number of crew	Mass, kg: Max take-off (empty) Number of engines x Max thrust, kgf	Flight speed, km/hr or Mach number: Max (at alt, m) Cruising (at alt, m)	Range, km (Combat radius, km) Service ceiling, m	Armament: gun/cannon, number x cal, mm (combat load, rounds) Missile/bomb armament (Max combat load, kg)	Aircraft dimensions, m length x height x wingspan (max sweepback angle) Wing area, sq m
1	2	3	4	5	6	7
B O M B E R S						
B-1B, USA	4	216,400 (87,000) 4 x 13,608	1,75 (11,000) 0.72 (11,000)	11,300 (about 8000) more than 15,000	-- ASM-86B crs msl; SRAM, Harpoon msl; bombs; see Straz (about 17,000)	44.8 x 10.4 x 41.7 (73.8) 181.2
B-52D Stratofortress, USA	6	204,000 (about 73,000) 8 x 8180	1000 (11,000) 810 (11,000)	16,000 (-) 13,750	4 x 12.7 or 4 x 20 (-) bombs (31,000)	47.5 x 12.4 x 56.4 371.6
B-52G Stratofortress, USA	6	221,350 (78,000) 8 x 6240	960 (11,000) 830 (11,000)	17,000 (-) about 16,000	4 x 20 (1200) ASM-86B crs msl; SRAM msl; bombs (up to 30,000)	47.9 x 12.4 x 56.4 371.6
B-52H Stratofortress, USA		227,000 (78,600) 8 x 7700	1050 (11,000) 830 (11,000)	18,000 (-) about 17,000	1 x 20 (1200) ASM-86B crs msl; SRAM msl; bombs (23,000)	47.9 x 12.4 x 56.4 371.6
FB-111A, USA	2	54,000 (21,500) 2 x 9200	2390 (11,000) 950 (11,000)	4600 (1900--w/4 SRAM) 18,000	-- SRAM msls, bombs (14,000)	22.4 x 5.2 x 21.3 (10.5) --

1	2	3	4	5	6	7
Mirage-2000 France	1	16,500 (7480) 1 x 9700	2450 (11.000) ·	2900 (700-1500) 18,000	2 x 30 (125 ea) Magic, R.530, AS-30L, Exocet msls; free-fit rkts, bombs (5000)	14.5 x 5.2 x 5.1 41
G-91Y Italy	1	6700 (3000) 2 x 1852	1000 (10,000) 630 (150)	3400 (370-600) 12,500	2 x 30 (125 ea) free-fit rkts, bombs (1800)	11.7 x 6.4 x 4 18.1
J-35F Draken Sweden	1	15,000 (7700) 1 x 7800	2100 (11,000) 950 (·)	2900 (560-1100) 18,300	2 x 30 (30 ea) Sidewinder, Falcon msls; free-fit rkts, bombs (1800)	14.1 x 9.4 x 4.4 49.2
AJ-37 Viggen Sweden	1	20,500 (9000) 1 x 11,800	2.0 (11,000) ·	4000 (500-1000) 15,500	2 x 30[#] (·) Sidewinder, Falcon, RB.04, RB.05 msls; free-fit rkts, bombs (6000)	15.4 x 6.8 x 10.6 46
JA-37 Viggen Sweden	1	17,000 (·) 1 x 12,750	2.0 (11,000) ·	(500-1000) 15,500	1 x 30[#] (150) Sidewinder, Falcon, Skyflash msls; free-fit rkts (6000)	15.4 x 6.8 x 10.6 46
Kefir-C.2 Israel	1	14,600 (7200) 1 x 8120	2000 (11,000) ·	4000 (370-1200) 17,000	2 x 30 (125 ea) Shafrir, Shrike, Maverick msls; free-fit rkts, bombs (4000)	13.6 x 6.2 x 5.2 34.9
F-1 Japan	1	13,700 (6360) 2 x 3310	1700 (11,000) ·	2500 (350-550) 15,240	1 x 20 (750) Sidewinder, ASM-1 msls; free-fit rkts, bombs (2700)	17.9 x 6.4 x 7.9 21.2

* on Mirage-2000N fighter-bomber
\# in suspended gun mount

1	2	3	4	5	6	7
Alpha Jet FRG, France	2	7250 (3500) 2 x 1350	1000 (0) 860 (·)	2720 (535-810) 14,650	1 x 27[#] or 1 x 30[#] (150) Magic, Maverick msls; free-fit rkt, bombs (2500)	12.3 x 4.2 x 5.1 17.5
AF.260W Italy	2	1360 (630) 1 x 750 hp	130 (0) 300 (1500)	1440 (280-550) 4500	2 x 7.62[#] (500) free-fit rkts, bombs (300)	7.2 x 2.4 x 8.4 10.1
MB.326G Italy	2	5390 (2700) 1 x 1550	840 (6100) 730 (6000)	2450 (130-650) 12,000	-- free-fit rkt, bombs (1800)	10.6 x 3.7 x 10.9 19.4
MB.339A Italy	2	5908 (3220) 1 x 1630	900 (0) ·	2100 (390-990) 14,600	2 x 7.62[#] (·) Sidewinder, Maverick msls; free-fit rkt, bombs (1800)	11 x 4 x 10.9 19.3
C-101 (E-25) Aviojet Spain	2	5600 (2700) 1 x 1500	800 (6100) 650 (9000)	3700 (185-835) 12,500	1 x 30 or 2 x 12.7[#] (·) Maverick msl; free-fit rkts, bombs (2250)	12.5 x 4.2 x 10.6 20
Saab-105 (SK-60) Sweden	2	4500 (2510) 2 x 740	770 (6000) 710 (9000)	1940 (215[#]) 12,700	-- Sidewinder msl; free-fit rkts, bombs (750)	10.5 x 2.7 x 9.5 16.3
IA-58 Pukara Argentina	2	6800 (4000) 2 x 1020 hp	500 (3000) 480 (6000)	3700 (275-575) 8300	2 x 20 (270 ea), 4 x 7.62[#] (400) free-fit rkts, bombs (1600)	14.2 x 5.4 x 14.5 20.3

TACTICAL FIGHTERS

* in suspended gun mount
\# with combat load of 700 kg

F-4D Phantom-2 USA	2	24,765 (12,700) 2 x 7700	2.0 (11,000) 950 (12,000)	3700 (590-1450) about 18,000	-- Sidewinder, Sparrow, Bullpup, Falcon, Shrike, Maverick msls; free-fit rkts; bombs (7250)	17.8 x 5 x 11.7 49.2
F-4E Phantom-2 USA	2	28,000 (13,700) 2 x 8120	2300 (11,000) 925 (12,000)	4000 (800-1200) about 18,000	1 x 20 (600) Sidewinder, Sparrow, Bullpup, Falcon, Shrike, Maverick msls (7250)	19.2 x 5 x 11.7 49.2
F-5A Freedom Fighter USA	1	9300 (3670) 2 x 1850	1400 (11,000) 1030 (11,000)	2700 (710-1030) 15,300	2 x 20 (300 ea) Sidewinder, Bullpup msls; free-fit rkts, bombs (3500)	14.4 x 4 x 7.7 15.8

1	2	3	4	5	6	7
F-5E Tiger-2 USA	1	11,200 (4290) / 2 x 2270	1700 (11,000) / 1040 (11,000)	3000 ([illegible]-1000) / 16,300	2 x 20 (280 ea) / Sidewinder, Maverick msls; free-fit rkts, bombs (3200)	14.7 x 4.1 x 8.1 / 17.3
F-15A Eagle USA	1	25,400 (12,700) / 2 x 11,340	2650 (12,000) / -	4800 (1100-1800) / 21,000	1 x 20 (940) / Sidewinder, Sparrow msls; free-fit rkts, bombs (6800)	19.4 x 5.7 x 13.1 / 56.5
F-15C Eagle USA	1	30,850 (12,700) / 2 x 11,340	2650 (11,000) / 0.9 (-)	4600 (1100-1800) / 20,000	1 x 20 (940) / Sidewinder, Sparrow msls; bombs (7250)	19.4 x 5.7 x 12.1 / 56.5
F-16A Fighting Falcon USA	1	16,000 (7300) / 1 x 10,800	2150 (12,000) / 0.9 (-)	3900 (550-900) / 15,000	1 x 20 (515) / Sidewinder, Sparrow, Maverick, Penguin msls; free-fit rkts, bombs (5400)	15 x 5 x 9.4 / 27.9
F-16C Fighting Falcon USA	1	17,000 (7600) / 1 x 11,300	2 (12,000) / 0.9 (-)	3900 (550-900) / 16,000	1 x 20 (515) / Sidewinder, Sparrow, Maverick msls; free-fit rkts, bombs (5400)	15 x 5.1 x 9.4 / 27.9
F-18A Hornet USA	1	15,740 (9800) / 2 x 7250	1900 (11,000) / -	3700 (740-1100) / 15,300	1 x 20 (570) / Sidewinder, Sparrow msls; bombs (6800)	17.1 x 4.7 x 11.4 / 38.0
F-100D Super Saber USA	1	15,800 (9500) / 1 x 7700	1390 (11,000) / 910 (11,000)	2400 (885) / 15,220	4 x 20 (200 ea) / Sidewinder, Sparrow, Bullpup msls; free-fit rkts; bombs (3400)	15.1 x 4.9 x 11.8 / 35.8
F-104G Starfighter USA	1	13,000 (6400) / 1 x 7170	2300 (11,000) / 980 (11,000)	2500 (1100-1200) / 17,700	1 x 20 (-) / Sidewinder, Sparrow, Bullpup msls; free-fit rkts; bombs (1800)	16.7 x 4.1 x 6.7 / 18.2
F-106A Delta Dart USA	1	17,350 (10,700) / 1 x 11,130	2370 (12,000) / 980 (12,000)	2400 (925) / 17,400	1 x 20 (-) / Falcon msl (-)	21.6 x 6.2 x 11.7 / 63.8
F-111E USA	2	41,300 (21,500) / 2 x 11,300	2.2 (11,000) / -	6100 (3600*) / 18,300	1 x 20 (2000) / Sidewinder, Shrike, Bullpup msls; bombs (11,000)	23 x 5.2 x 19.2 (9.7#) / 48.8 (61.1#)

* with combat load 7250 kg
\# max sweepback angle

1	2	3	4	5	6	7
Lightning-F.6 Great Britain	1	18,200 (12,400) / 2 x 7400	2400 (12,200) / 960 (12,000)	2300 (1200) / 18,300	2 x 30 (120 ea) / Red Top, Firestreak msls; free-fit rkts, bombs (-)	16.8 x 6 x 10.6 / 42
Hunter-FGA.9 Great Britain	1	10,800 (6000) / 1 x 4540	1150 (11,000) / 740 (-)	2700 (250-570) / 15,200	4 x 30 (150 ea) / Sidewinder, Firestreak msls; free-fit rkts, bombs (3400)	14 x 4 x 10.3 / 32.4
Harrier-GR.3 Great Britain	1	11,340 (5600) / 1 x 9750	1180 (300) / 980 (6000)	3400 (650-640) / 15,600	2 x 30* (130 ea) / Sidewinder, Martel msls; free-fit rkts, bombs (2300)	13.9 x 3.5 x 7.7 / 18.7
Tornado (Tornado-GR.1) Gr Britain, FRG, Italy	2	27,200 (14,000) / 2 x 7250	2.2 (11,000) / -	3000 (1400#) / 15,000	2 x 27 (125 ea) / Sidewinder, Sparrow, Skyflash, Martel, Maverick, Kormoran, [illegible], AS-30, bombs (7250)	16.7 x 5.9 x 13.9 (8.6) / 31
Tornado-F.2 Gr Britain, FRG, Italy	2	28,000 (14,500) / 2 x 7250	2.2 (11,000) / -	4250 (550-1850) / more than 15,000	1 x 27 (-) / Sidewinder, Skyflash msls; (-)	18.1 x 5.9 x 13.9 (8.6) / 31
Jaguar-A, -E, -GR.1 Great Britain, France	1	15,700 (6800) / 2 x 3650	1700 (10,000) / 700 (12,000)	3500 (575-1300) / 14,000	2 x 30 (150 ea) / Sidewinder, Magic, AS-30, Martel msls; free-fit rkts, bombs (4500)	16.8 x 4.9 x 8.7 / 24.2
Mirage-F.1C France	1	14,900 (7350) / 1 x 7200	2330 (12,000) / 900 (9000)	3300 (730-900) / 16,000	2 x 30 (125 ea) / Sidewinder, Magic, R.530, AS-30 msls; free-fit rkts, bombs (4000)	15.2 x 4.5 x 8.4 / 25
Mirage-3C France	1	11,800 (6400) / 1 x 6000	2350 (11,000) / 950 (11,000)	2300 (550-700) / 16,500	2 x 30 (125 ea) / Sidewinder, Magic, R.530, AS-30 msls; free-fit rkts, bombs (1360)	13.9 x 4.2 x 8.2 / 34.9
Mirage-3E France	1	13,500 (7000) / 1 x 6200	2350 (12,000) / 950 (11,000)	3900 (300-600) / 17,000	2 x 30 (125 ea) / Sidewinder, Magic, R.530, AS-30 msls; free-fit rkts, bombs (1360)	15.1 x 4.5 x 8.2 / 34.9
Mirage-5F France	1	13,500 (6600) / 1 x 6200	2330 (12,000) / 980 (11,000)	3730 (650-1300) / 17,000	2 x 30 (125 ea) / Sidewinder, R.530, AS-30; free-fit rkts, bombs (4000)	15.5 x 4.5 x 8.2 / 34.9

* In suspended gun mount
\# with combat load 3000 kg

1	2	3	4	5	6	7
Mirage-2000 France	1	16,500 (7400) 1 x 9700	2450 (11,050) ·	2900 (700-1900) 18,000	2 x 30 (125 ea) Magic, R.530, AS-30L, ASMP, Exocet mslz; free-fll rkts, bombs (6000)	14.5 x 5.2 x 5.1 41
G-91Y Italy	1	8700 (3900) 2 x 1814	1090 (10,000) 630 (150)	3400 (370-600) 12,500	2 x 30 (125 ea) free-fll rkts, bombs (1800)	11.7 x 6.4 x 4. 28.1
J-35F Draken Sweden	1	15,000 (7700) 1 x 7000	2100 (11,000) 950 (·)	2900 (560-1190) 18,300	2 x 30 (30 ea) Sidewinder, Falcon mslz; free-fll rkts, bombs (1800)	14.1 x 3.8 x 3.9 48.2
AJ-37 Viggen Sweden	1	20,500 (9000) 1 x 11,800	2.0 (11,000) ·	4500 (500-1000) 16,500	2 x 30[a] (·) Sidewinder, Falcon, RB.04, RB.05 mslz; free-fll rkts, bombs (6000)	15.4 x 5.8 x 10.6 46
JA-37 Viggen Sweden	1	17,000 (·) 1 x 12,750	2.0 (11,000) ·	(500-1000) 16,500	1 x 30[a] (150) Sidewinder, Falcon, Skyflash mslz; free-fll rkts (6000)	16.4 x 5.9 x 10.6 46
Kfir-C.2 Israel	1	14,500 (7300) 1 x 8125	2200 (11,000) ·	4000 (370-1700) 17,000	2 x 30 (125 ea) Shafrir, Sparrow, Maverick mslz; free-fll rkts, bombs (4000)	15.6 x 4.3 x 8.2 34.9
F-1 Japan	1	13,700 (6300) 2 x 2310	1700 (11,000) ·	2500 (290-590) 14,240	1 x 20 (750) Sidewinder, ASM-1 mslz; free-fll rkts, bombs (2700)	17.9 x 6.4 x 7.9 22.2

[a] on Mirage-2000E fighter-bomber
[b] in suspended gun mount

NATO's Main Command in the English Channel Zone

18010301i Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 1, Jan 88 (signed to press 7 Jan 88) pp 59-64

[Article by Captain 1st Rank V. Khomenskiy: "NATO's Main Command in the English Channel Zone"]

[Text] The main command of NATO combined armed forces in the English Channel zone (Allied Command Channel—ACCHAN) was established in February 1952. Its zone of responsibility extends over the English Channel, Pas de Calais and the southern North Sea area, with the exception of Helgolander Bay (considered coastal waters and comprising part of the NATO Central European theater of combat operations). The ACCHAN zone is divided into three military regions: Nor, Plymouth and Benelux, each of which has a functioning command headquarters, even in peacetime.

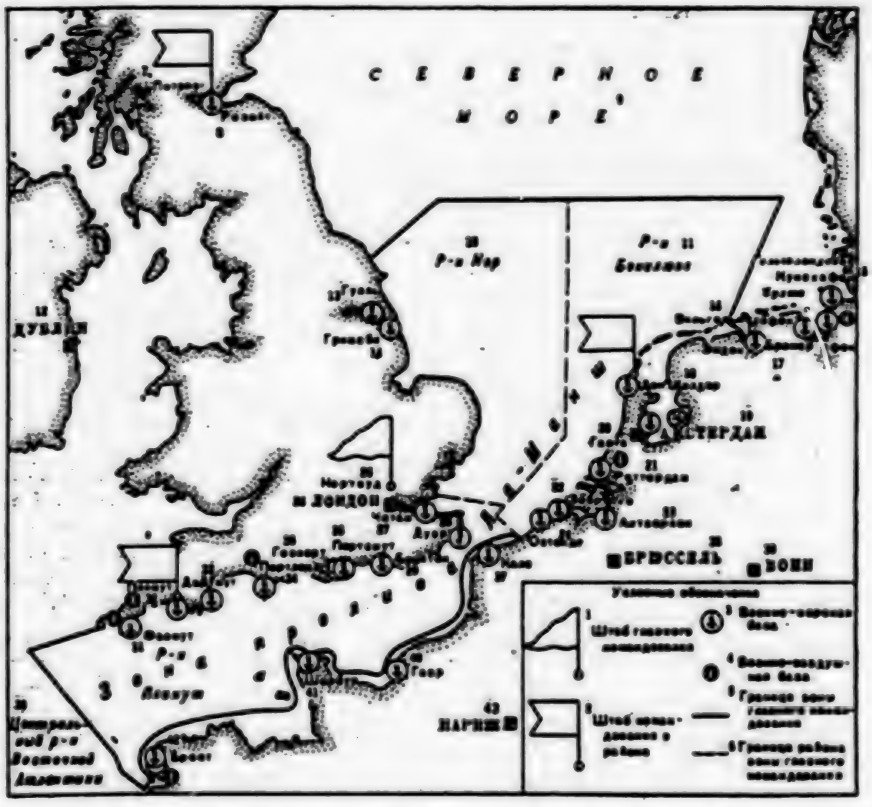
The English Channel Zone owes its strategic significance to its geographic position, located between two major NATO military commands (Supreme Allied Command Europe and Supreme Allied Command Atlantic) and provides the connecting link between the marine (Atlantic) and land (European) combat theaters. Ocean and sea lines of communication meet in this region, coming from the Atlantic Ocean, the Mediterranean and North seas into the ports of Northern Europe. The coastal regions of countries in this zone contain major naval bases, ports and other important military, industrial and logistics facilities of the Western European nations. Transportation of extremely important raw materials necessary to the economies of these countries is carried on along English Channel Zone lines of communication. Western press reports state that about 4000 oceanic and coastal shipping vessels pass through these straits every day or effect loading in their ports. Oil and oil derivatives play a special role in this shipping.

The military-political leadership of the North Atlantic alliance believes that, under conditions of exacerbated international tension and at the outbreak of war, transportation of main reinforcement forces, weapons, combat equipment, supplies and provisions across the channel zone will be accomplished to support combat operations in Europe.

Overall direction of NATO combined forces in the English Channel Zone, to include the combined naval forces, permament mine-sweeping forces and combined land-based aviation, is exercised by its Commander-in-Chief (CINCHAN), who is directly subordinate to NATO's military committee. Operationally subordinate to CINCHAN are the allied naval force commanders in the military regions (Nor, Plymouth, Benelux), the ACCHAN combined land-based aviation commander (also the CINCHAN deputy for aviation), and the commander of the permament mine-sweeping forces.

A British admiral has been appointed Commander-in-Chief Allied Forces English Channel Zone. He simultaneously occupies the position of Commander-in-Chief Allied Forces Eastern Atlantic.

NATO's ACCHAN headquarters (Northwood, London area), is headed by a chief of staff, an admiral from the Netherlands, and includes representatives of all services of the armed forces (primarily naval officers) from Great Britain, the Netherlands and Belgium. A Belgian officer is the deputy to the chief of staff. Communications officers from France's naval forces also belong to the



The Region of NATO's Allied Command English Channel Zone

Key:
1. ACCHAN headquarters
2. Regional headquarters
3. Naval base
4. Air force base
5. ACCHAN operational boundaries
6. Regional boundaries
7. Petrevy
8. Rosite
9. North Sea
10. Nor region
11. Benelux region
12. Dublin
13. Goole
14. Grimsby
15. Cuxhaven
16. Wilhelmshaven
17. Bremerhaven
18. Den Helder
19. Amsterdam
20. Hague
21. Rotterdam
22. Zebrugge
23. Antwerpen
24. Oostende
25. Northwood
26. London
27. Chatham
28. Dover
29. Brighton
30. Eastern Atlantic central region
31. Falmouth
32. Plymouth
33. Dartmouth
34. Portland
35. Gosport
36. Portsmouth
37. Calais
38. Brussels
39. Bonn
40. Le Havre
41. Cherbourg
42. Brest
43. Paris

headquarters staff. In peacetime, ACCHAN headquarters is co-located with NATO's Main Allied Command Headquarters Eastern Atlantic. In a period of tension, the headquarters separate and are augmented with British officers from the maritime headquarters, the air transport/shipment command and reserve, reserve officers of the United States Navy, and reserve officers of the other European NATO countries.

In peacetime, CINCHAN and his staff develop and amplify plans for the employment of NATO combined armed forces in the channel zone and allocate forces designated for transfer to his authority, inform higher NATO authorities as to their operational requirements, develop and organize the conduct of operational measures prescribed in NATO plans and determine training standards. CINCHAN is also charged with monitoring the state of combat readiness of national forces transferred to NATO and those designated for such transfer, and monitoring their conformance with prescribed readiness categories. In wartime he commands NATO's combined forces in the English Channel Zone, directs coordination of the combat operations carried out by naval forces and land-based aviation in the region, and organizes mutual support and cooperation with the NATO supreme allied commands in Europe and the Atlantic.

Except for the permament mine-sweeping forces in the channel zone, ACCHAN does not have naval forces and assets at its disposal during peacetime. During periods of increased international tension and upon the outbreak of war, however, as well as for the conduct of NATO exercises and maneuvers, Great Britain, the Netherlands and Belgium transfer armed forces contingents (navy and air force) to the command as stipulated in operational plans. Having left NATO's military organization in 1966, France does not allocate her forces to ACCHAN. Activated participation of French naval forces in joint NATO exercises, however, including those in the English Channel Zone, shows that NATO does not exclude the possibility of using French forces to participate in combat operations as part of NATO combined forces.

According to foreign press reports, ACCHAN may be tasked in wartime with the following basic missions: to achieve and maintain air and sea superiority, to establish control over shipping, defend the sea lines of communication, engage enemy submarines and groups of surface-vessel strike forces, conduct mine defensive operations, support amphibious assault operations and provide fire support to the ground forces engaged along coastal axes of advance. Because of the relatively limited forces designated for transfer to ACCHAN operational control, close cooperation with the European and Atlantic commands is envisioned with respect to covering the northern and southwestern approaches to the channel zone, as is the organization of reliable anti-air and anti-submarine protection for this important juncture of sea lines of communication.

Western military experts estimate that accomplishment of the above-mentioned missions will entail the allocation to the command of more than 100 warships (primarily mine-sweepers), cutters and auxiliary ships, about 60 aircraft and base patrol helicopters, reconnaissance and tactical aviation from the NATO member nations whose territories adjoin the channel zone.

NATO combined armed forces in the channel zone may be reinforced by a permanent task force from Allied Naval Forces Atlantic, a special NATO naval strike force for emergency operations (multi-purpose aircraft carrier with escort ships, deployed at the western accesses to the zone) and, when necessary, by other NATO forces of Allied Forces Atlantic. Distant early warning radar and NATO Air Command aircraft may also be required for the missions of air reconnaissance and maritime illumination.

Warships, patrol craft and auxiliary ships of the naval forces of Great Britain, the Netherlands and Belgium will comprise NATO's combined naval force in the English Channel Zone. Upon the outbreak of war, allocated ships are transferred to the operational control of ACCHAN region commanders in Nor, Plymouth and Benelux military regions.

The naval commands of Nor and Plymouth regions are headed by the commanders of Shotland (headquarters at Petrevy) and Plymouth (at Plymouth) naval regions of the British navy, respectively. The Benelux region (headquarters at Den Helder) is headed by the commander of the Netherlands naval forces.

Among the peacetime missions of the region commanders are the following: to develop plans for the deployment of allied naval forces in their zones of responsibility, coordinate these plans with national and NATO commands, make recommendations to CINCHAN with respect to the conduct of combat operations, periodically evaluate the state of combat readiness of national naval forces designated for transfer to their operational control. Additionally, they plan combat training, direct the exercises of heterogeneous forces, analyze the results and provide recommendations as to the most effective employment of naval forces in various situations.

In wartime several operational task forces may be formed within ACCHAN, to include submarines, surface ships and patrol craft.

It is planned to use British and Dutch diesel submarines both independently and jointly with surface ships mainly to protect the sea lines of communication. The main regions of their combat employment are believed to be the southern area of the North Sea and the western approaches to the channel. In this regard, Western military experts believe it will be difficult to employ submarines in the northern approaches to the channel because

of the relatively shallow water. Submarines will operate in a position-maneuver mode, or comprise part of the security force for amphibious assault detachments and convoys.

Surface ships will comprise the core of allied naval forces in the channel zone. British, Dutch and Belgian surface vessels, equipped with anti-ship weapons and torpedoes, will have the mission of engaging enemy submarines and surface ships, escorting marine convoys and, when necessary, providing security for amphibious assault operations and fire support to ground forces conducting combat operations along coastal axes of advance.

Surface ships are planned to be used in search/strike groups of two-four missile and ASW ships each. It is expected that these groups will conduct their most intensive combat operations in the western approaches to the channel where, as noted in the foreign press, the enemy will deploy his submarines for the purpose of disrupting transportation by sea of reinforcement units, supplies and provisions.

Submarine search and detection efforts will be conducted by naval search/strike groups working jointly with British (Nimrod-MR.2) and Dutch (P-3C Orion) combat patrol aircraft.

So-called "deck helicopters" (Wasp-HAS.1, Sea King-HAS.2 and 5, Lynx-HAS.2 and 3) also play an important role in the accomplishment of ASW missions. These helicopters can detect and destroy submarines both independently and upon direction of surface vessels and patrol craft.

Mine-sweepers will be called upon to eliminate minefields and provide anti-mine protection to ships making the crossing as they exit naval bases and ports. It is believed that the shallow depths and limited number of navigational channels for heavy-tonnage shipping create conditions favorable for laying mines. Minefields laid secretly by submarines, surface ships, aircraft and auxiliary ships in dense shipping areas during a period of increased tension can significantly affect the maritime transportation of NATO member nations. Matters concerning the formation and employment of mine-sweeper forces are therefore of great significance. During the course of operational and combat training, the NATO channel command has been studying and developing the most beneficial and efficient methods of organizing these forces. ACCHAN believes that one such method is the formation of a permanent mine-sweeper task force.

A permanent mine-sweeper task force was established in the English Channel zone in May 1973 by decision of the military planning committee, comprising a multi-national NATO naval force which functions even in peacetime.

According to foreign reports, creation of the task force was prompted first and foremost by political considerations—to demonstrate the readiness and decisiveness of NATO member nations "to defend their collective interests" at sea through the force of arms. In fact this means that if imperialism unleashes an armed conflict, the nations which have allocated their ships to this task force—Belgium, Great Britain, the Netherlands, West Germany and Denmark—will be immediately committed to it.

The task force is formed annually, usually in January, at one of the channel zone's naval bases. Force composition by ship changes regularly. Every 6-12 months each mine-sweeper is replaced by another from the same country. Upon request of the national commands, and with the permission of NATO military authorities, ships which comprise the task force may be replaced more frequently.

CINCHAN exercises overall control of the permanent mine-sweeper task force. During combat training and for exercises, the task force commander also falls under the operational control of the regional NATO naval force commanders (Nor, Plymouth, Benelux).

Since 1973, up to 90 ships have undergone combat training as part of this task force. The force has participated in over 100 national and NATO exercises, has visited about 100 various ports in 10 countries, and has spent about 50 percent of the time at sea, covering up to 20,000 miles each year.

Task force exercises develop the organization of mutual support and communications among ships and tactical mine-sweeping methods. Personnel become intimately familiar with the navigational areas of the coastal waters of Western Europe and the Baltic Straits, perfect their maritime expertise, and train in the employment of various types of weapons. Task force commanders acquire skills with respect to directing multi-national formations. Foreign military experts believe it is useful to exchange combat crews in order to develop familiarity with the mine-sweeper armament and duty organization found on ships of other nationalities, and also to participate with them in the conduct of mine-laying and mine-sweeping operations.

According to foreign press reports, the mine-sweeper task force may be significantly reinforced during a period of sharply exacerbated international relations with mine-sweepers and other warships from the NATO bloc countries. A multi-national mine-sweeper task force of greater proportions will be formed based on this reinforcement, which will conduct anti-mine warfare and protect sea lines of communication in the channel zone and, when necessary, in other maritime regions of Western Europe. These missions are systematically practiced and developed during the course of exercises such as "Teamwork," "Northern Wedding," "Ocean Safari," "Joint Maritime Coast," "Norminex," and others.

Combined land-based aviation forces are formed during a period of increased international tension and upon the outbreak of war. They consist of British Nimrod patrol aircraft, Buccaneer light bombers, Sea King, Wessex and Lynx coastal-based helicopters, and the Orion land-based patrol aircraft of the Netherlands navy.

The commander of the 18th Air Group (headquarters at Northwood) of the British Air Force is simultaneously the commander of the combined land-based aviation force in the channel zone. Subordinate to him are the combined land-based aviation commanders in Nor (Petrevie) and Plymouth (Plymouth) regions, also British officers. There is no combined land-based aviation command in the Benelux Military Region since the Netherlands base patrol aircraft fall organizationally under that country's naval forces command.

In peacetime the combined land-based aviation staff develops plans for the employment of air assets in maritime operations in the English Channel zone, coordinates them with appropriate NATO commands (Europe and Atlantic), directs air activities during exercises, and organizes mutual support and cooperation among the region commanders with allied naval forces and with NATO's combined air defense system in Europe.

During the course of national and combined armed forces exercises conducted in the ACCHAN zone, aircraft and helicopter crews develop and improve the tactics of seeking, finding and destroying submarines, of inflicting bombing and strafing attacks against enemy surface ships and commercial vessels, and of effecting mutual support and coordination with ASW and search-strike ships to accomplish the mission.

Western naval experts feel that, in spite of the fact that ACCHAN's zone of responsibility is relatively far-removed from the borders and territorial waters of the USSR and other countries of the socialist community, the command plays an important role in the combined armed forces system of the North Atlantic alliance. Foreign military experts believe that a number of factors—the developed, rather well defended network of naval bases, airfields and basing points; the zone's favorable geographic location; the command's flexible organizational structure, well-exercised during peacetime—will enable swift allocation, organization and deployment to combat areas of national forces, as well as their utilization during a crisis situation or in the event of war, in the interests of the aggressive NATO bloc.

At the same time, NATO experts believe that the narrow channels and water passages may provide a good opportunity for secretive enemy mine-laying during a period of tension. The organization of a reliable anti-mine defense for naval bases and convoys is therefore considered one of the most important tasks facing allied naval forces in the region.

NATO has devoted a great deal of attention to providing air cover to bases and groups of naval forces in the zone. Efforts are underway to increase the effectiveness of zone air defense systems by organizing close cooperation and coordination between ship-based air defense systems and NATO's combined air defense forces and resources in Europe.

Western press reports describe the intensive implementation of naval force development programs underway in the NATO countries having direct and immediate interests in this region. Such programs call for the construction of new ships, aircraft and helicopters, their outfitting with modern weapons systems for the purpose of enhancing NATO's overall combat capabilities in the English Channel zone. New principles of naval force employment are being sought which will fully take advantage of the increased combat capabilities of today's military equipment. Naval force organizational structure is being developed and improved. Intensive operational and combat training is underway. These measures show quite clearly the aggressive nature of the North Atlantic alliance, which continues to pursue the arms race and dictate "from a position of strength" when resolving complex international problems involving countries with diverse socio-political systems. Such measures are an obstacle along the path towards achieving peace and security in Europe. They undermine trust among peoples and provide evidence to show how imperialism is singlemindedly preparing for war and displaying complete disregard for the peaceful initiatives of the USSR and other countries of the socialist community.

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Use of Lasers in Communication With U.S. Submarines

18010301j Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 1, Jan 88 (signed to press 7 Jan 88) pp 64-68

[Article by B. Trinchuk, candidate of technical sciences: "Use of Lasers in Communications With U.S. Submarines"]

[Text] The effectiveness of combat operations conducted by nuclear submarines, including nuclear missile-carrying submarines—one of the components of the American strategic triad—depends to a significant degree on the sophistication and reliability of the systems which provide for communications with them. The United States Navy is therefore giving this matter its most serious attention.

Along with developing communications in the radio spectrum, the United States has been conducting, since the end of the 1970's, a program of research and development designated "Laser System of Communications

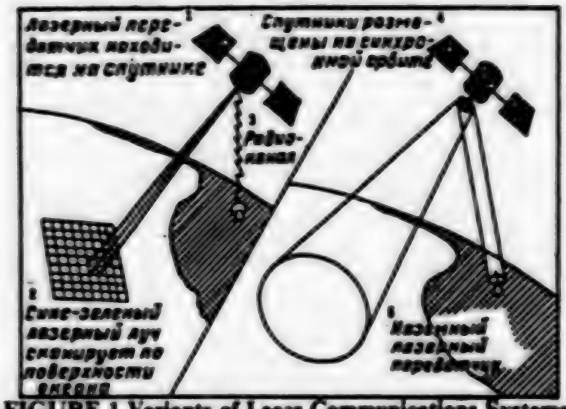

FIGURE 1 Variants of Laser Communications Systems With Submarines Using Satellite and Ground-Based Laser Transmitters

Key:
1. Laser transmitter located on satellite
2. Blue-green laser beam scans ocean surface
3. Radio link
4. Satellites launched in synchronous orbit
5. Ground-based laser transmitter

with Submarines." The purpose of this program is to build strategic and tactical systems of communications with submerged submarines.

The concept of using an optical channel as an alternative to a communications system using extremely low frequencies (ELF) found support by virtue of the distinct advantages presented in transmitting information in the optical spectrum, the most important of which are significantly greater speed and secrecy. The value of both systems has been the subject of widespread discussion in United States military circles in recent years. It is believed that they may supplement one another (and not compete). Constant ELF communications can be guaranteed with every submarine over vast expanses practically independent of climatic and meteorological factors, but the speed of information transmission is relatively low. As noted above, a laser system of communications would make it possible to transmit information at significantly greater speed, a factor which would substantially enhance the operational capabilities of submarines.

Studies conducted at the end of the 1970's present two possible variants for constructing a laser communications system. The first of these involves a satellite-positioned laser transmitter. Information from Earth to the satellite is transmitted by radio channels. A narrow laser beam scans the Earth's oceans, transmitting information to submarines. The second variant involves the use of a ground-based laser transmitter and a re-reflecting mirror positioned on a satellite is used to conduct scanning with a relatively wider beam (see Fig 1).

The optical properties of water dictate the acceptable wavelength spectrum for emissions from the laser transmitter—the greatest water transmission factor is found within the limits of the blue-green region of the visible spectrum, 460-530 nanometers. In a scientific and technical respect, development of a laser communications system depends to a significant degree on the ability to build a laser which emits in precisely this range of the spectrum. American military experts believe that building a ground-, aircraft- or satellite-based laser transmitter requires the selection of this region of the spectrum for emission.

To effect reliable communications with submarines submerged at depths exceeding 100 meters, it is necessary for a satellite-based laser transmitter to study impulses ranging from 20-1000 nanosec in duration, with energies of 1-10 Joules. The laser must function with a repetition frequency of 10-1000 Hz; average power must be at least 1 kW. The laser's efficiency, defined as the ratio of optical power emitted to electrical power required from the source, must be at least 1 percent, and the period of operation—10,000 hours. A ground-based laser transmitter must provide impulse emission energy three orders of magnitude greater, i.e., average power must be about one megawatt. Such a sharp increase in requirements with respect to the laser's energy parameters is related to the attenuation of radiation in the atmosphere and, what is more significant, to the low efficiency of the re-reflecting mirror (due to the increased diameter of the laser beam). Efficiency and period of operation requirements for the ground-based laser may be lowered.

The development of laser transmitters, direction and control systems and other devices using laser beams is a complex scientific and technical task in which a significant number of research laboratories of various universities and major U.S. corporations are involved. The amount of money devoted to financing these efforts has increased steadily in recent years—from 4.5 million dollars in 1980 to 30.3 million in 1986.

Prior to 1984 both variants of the laser communications system were being developed in the United States. Significant progress in building the satellite-based lasers, however, enabled American scientists and military experts to select them and discontinue efforts on the ground-based variant.

Lasers based on alumino-yttrium garnet activated by neodymium ions are today the most well-developed variety and find widespread application in military equipment. They were used in 1981 in experiments to study the passage of laser emissions through the atmosphere and water and to develop scanning systems; in 1984 they were used to test an aircraft-submarine communications system.

A dye-based laser using lamp-excitation restructures the emission wavelength, i.e., enables us to choose the optimal wavelength from the point of view of achieving minimal laser-emission absorption in the water. Because

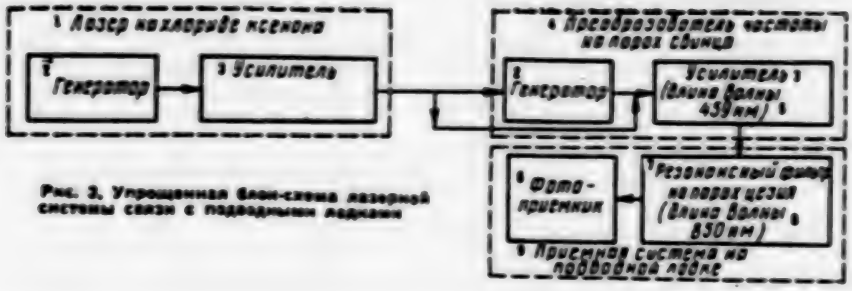

Рис. 2. Упрощенная блок-схема лазерной системы связи с подводными лодками

FIGURE 2 Simplified Schematic of Laser Communications System With Submarines

Key:
1. Xenon chloride laser
2. Generator
3. Amplifier
4. Lead vapor frequency converter
5. Wave length 459 nm
6. Photo-receiver
7. Cesium vapor resonance filter
8. Wave length 850 nm
9. Submarine receiver unit

of its low efficiency and short useful life, this type of laser is today giving way to the dissociative mercury bromide and xenon chloride eximeric lasers, with frequency conversion to the blue-green region of the visible spectrum.

The dissociative mercury bromide laser excited by electrical discharge emits directly in the blue-green range of the visible spectrum (502-504 nm), and thus makes frequency conversion unnecessary. In 1981 a mercury bromide laser was demonstrated having an average power of 200 watts (impulse energy 2 Joules at repetition frequency 100 Hz) and efficiency of 1 percent. Today the most complex problem remains attainment of the required useful life, insofar as the laser's active medium reacts with construction components. New ways have recently been found to enhance the efficiency of this laser.

Eximeric lasers are today the most powerful and efficient sources of ultraviolet radiation. Their active gas medium consists of a mixture of inert gases and halogens (chlorine, fluorine). Excitation of the atoms of these gases results in the formation of excited molecules (xenon chloride, for example) which, when transformed to their primary (unexcited) state, emanate and decompose. In designing a laser communications system, the Northrop corporation foresees the use of a xenon chloride eximeric laser in which the xenon chloride is excited by electrical discharge and emits at a wavelength of 308 nm.

Emissions are produced in a generator (see Fig 2)—relatively weak, but having great spatial and time characteristics—and are then amplified. Emission wavelength (frequency) conversion takes place in a dual-circuit, lead vapor converter. Frequency conversion of the light is based on inducement of the Raman effect which occurs in strong light fields. This causes vibration of the atoms and molecules in a non-linear (lead vapor in this instance) medium. The vibrations lead to dispersion of the light wave, one component of which has a frequency less than that of the falling light by the amout of the frequency of molecular or atomic vibrations. The selection of lead as the active medium in the converter inducing the Raman effect is dictated by the necessity to obtain emissions in the blue-green region of the visible spectrum and the need for the frequency of the converted emissions to match that of the resonance transfer in the active medium of the submarine's emission-receiver filter.

Use of a filter in front of the emission receiver itself is necessary in order to prevent solar radiation from entering it. This will substantially raise the signal-to-noise ratio and regenerate coded information. Use of a resonance filter, based on the excitation of cesium atoms with emissions 459 nm in wavelength and subsequent release of emissions in the red region of the spectrum, has significantly increased the efficiency of the communications system. American experts believe atomic resonance filters in this particular design of laser communications system will increase by 100 meters the maximum depth at which emissions can be received, or will reduce by a factor of 15 the transmission time for a message while simultaneously reducing the power required by the laser transmitter.

In 1985 the Northrop corporation announced that it had built a xenon chloride laser with excitation by gas electrical discharge, having impulse emission energy of 4 Joules at 308 nm wavelength and repetition frequency of

100 Hz (average power 400 W). They stated also that the power supply and the laser's regulation system have such long operating lives that they will have no limiting effect on the useful life of the laser system as a whole. In addition, they achieved a conversion factor of 50 percent for emission conversion to the blue region of the visible spectrum (459 nm) while maintaining high beam quality and small divergence.

Foreign press reports note that Northrop's convincing demonstration of the advantages of this design of laser submarine-communications system has forced U.S. Defense Department officials to reconsider their views with respect to the program for building such a system, at one time (in 1983) called risky, expensive, and hardly able to be implemented even by the end of the 1990's. Thus, a Defense Department representative announced that "the status of the program to develop a communications system using lasers in the blue-green region of the spectrum has changed significantly in recent years. At this time there are no unresolved problems related to the physics of laser communications with submarines, although the engineering effort to build reliable and viable systems remains to be accomplished."

In January 1985 the United States Navy and Department of Defense Research Agency signed an agreement providing for the building of a laser system of communications with submarines in the 1990's. It is expected that the research planned for 1986-1987 will provide the data necessary to resolve the question of the expediency of embarking on a full-scale program for development of a satellite laser communications system. American military experts believe this phase is necessary to confirm the prospects of actually putting these principles of physics to work in a device which meets space-basing requirements. At the same time, a number of complex technical matters must still be resolved—in particular the matter of achieving high longevity for the active media in the eximeric laser and frequency converter. Chlorine, for example, one of the active medium components in the eximeric laser, reacts with the construction materials, a process which leads to its depletion and the appearance of molecules, some of which can absorb emissions on the generation wavelength of the laser. Methods and devices have now been developed and used in general-industrial-application lasers for purifying the active medium. Helionetics, the corporation which lost to Northrop in bidding on the contract to develop the eximeric laser communications system, has built a maintenance-free xenon chloride laser, i.e., with automatic active-medium refueling. Another complex scientific and technical task is the development of an induced-Raman-effect converter using lead vapor, with an operating temperature of 1200-1300 degrees Celsius.

In 1984-1985 the Northrop and Lockheed corporations concluded contracts with the U.S. Department of Defense for development of an experimental laser transmitter module (5.1 million dollars) and construction of a prototype (7.8 million). The Pentagon is financing efforts by the Helionetics corporation in eximeric laser technology (0.5 million dollars) and its development of powerful impulse devices for these lasers (1.1 million), as well as work conducted by the firm TRW to increase the power of eximeric lasers (6.9 million) and other efforts.

The experimental laser transmitter module being built by Northrop and Lockheed includes power supply, emitter, frequency converter and emission shaping system. It is expected that, after extensive testing and finalization of certain components, it will be ready for operation on board a satellite (which was to be constructed the third quarter of 1986). The emission receivers were developed by General Telegraph and Electric and MacDonnell Douglas, who intended to complete this work at the end of 1986.

According to a statement issued by a representative of the Defense Department, the program described above is aimed at building space-based lasers "viable even in the event of a nuclear conflict, capable of transmitting commands to a submarine and to automatic sea-based weapons systems, such as self-regulated, deep-water CAPTOR mines, even under conditions of dense cloud cover."

Research and development conducted during the first half of the 1980's has led to a refinement in the capabilities of the laser communications system. Thus, according to Western press reports, the speed of information transmission from laser transmitter to receiver amounts to thousands of bits per second (speed of information transmission for ELF communications systems is less than one bit per minute; for the TACAMO communications system—up to 75 bits/minute).

American military experts believe a satellite laser system for communications with submarines may consists of two satellites in synchronous orbit and dozens of receivers on the submarines (at a total cost of at least 2 billion dollars). Today's proposed designs for construction of a laser transmitter are not final products. Efforts continue to build more sophisticated lasers. Foreign press reports state that the U.S. Navy has concluded a $10 million contract with the Boeing corporation for development of a laser based on free electrons, emitting in the 500-nm region.

The Pentagon's intensified development of a satellite-based laser system for communicating with submarines—a most important strike force of the U.S. Navy—provides evidence once again as to the aspirations of the U.S. military-political leadership to increase their capabilities for employing offensive weapons.

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New Japanese Guided Missile Destroyer

18010301k Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 1, Jan 88 (signed to press 7 Jan 88) pp 69-70

[Article by Captain 1st Rank Yu. Yurin: "New Japanese Guided Missile Destroyer"]

[Text] With the active assistance of the United States Navy, Japan has designed a ship with the multi-functional Aegis weapons system, using the American DDG51 guided missile destroyer Orly Burke as a prototype. The new ships will become the largest in the Japanese navy and are scheduled to replace guided missile destroyers of the Amatsukadze and Tatikadze varieties in the 1990's.

Japan's National Defense Directorate requested initial appropriations for building the lead ship in the draft budget for FY88 (which begins 1 April). Total construction cost is estimated to be 140 billion yen (about 1 billion American dollars). If these appropriations are approved by the government and parliament, the Japanese navy intends to enter into contract with Mitsubishi Dzukoge for construction of the first ship of the series. The main subcontracting firms selected are Isikawadzima-Harima Dzukoge (power/propulsion unit) and Mitsubishi Denki (radioelectronic equipment). The lead ship is to be constructed at the shipbuilding yards at Nagasaki. Lay-down is projected for 1990, launch for 1991, and assignment to the fleet—1993.

A final decision on the total number of ships of this series to be built has not yet been reached. Thus, the current five-year (1986-1990) program approved by the Japanese government provides allocations for only two ships. But long-range plans of the Japanese navy call for construction of eight—funding for the first four to be allocated in 1988, 1990, 1992 and 1994, i.e., one ship to be commissioned every even fiscal year, beginning in 1992.

Japan's new guided missile destroyer has been designed with the following tactical and technical characteristics: standard displacement—about 7200 tons; full-load displacement—up to 8500 tons; length—158 meters; width—17.5 meters; draft—6 meters. A twin-shaft, gas turbine propulsion system of the COGAG type (four LM2500 gas turbines manufactured by General Motors) with total power of 80,000 hp enables a maximum speed of more than 30 knots. Cruising range at a fuel-conserving speed of 20 knots is 6000 miles.

The ship's main armament consists of two 4-container Harpoon guided missile launchers, two Mk41 vertical-launch systems (a total of 96 container-cells, 32 in the bow and 64 in the stern) with standard loading of Standard-SM-2-MR anti-aircraft missiles (74) and ASROK ASW missiles (16), one single-barrel 127-mm OTO Melara Mk45 artillery piece, two 6-barrel 20-mm Mk15 Vulcan-Phalanx anti-aircraft guns, two 3-tube 324-mm type-68 (Mk32) torpedo launchers with Mk46 mod. 5 torpedoes, one or two SH-60J ASW helicopters of the LAMPS Mk3 system, four 6-tube Mk36 for setting out passive jamming. The crew consists of about 330 men.

The radioelectronic equipment includes detection radar for air targets (AN/SPY-1D, with four phased-array antennas) and surface ships (OPS-28), Mk99 missile fire direction system with three AN/SPG-62 target illumination radars (one in the bow, two in the stern), Mk160 artillery fire direction system, NOLQ-2 electronic warfare and RTR [expansion unknown] system, sonar system with OQS-101C (under the keel) and TACTAS or AN/SQR-19 (extended and towed) antennas, AN/UPX-29 identification system, automatic information unit and apparatus for processing and presenting data (AN/UYK-43, -44), navigation and communications equipment (ORN-6, Link-11, -14, and others).

As reported in the foreign press, the new ships will, for the first time in the Japanese navy, incorporate a system for collective crew protection from the effects of weapons of mass destruction (chemical, bacteriological, radiological). Only filtered air will enter the internal spaces. Outside entranceways and hatches are outfitted with airlocks. An overpressure is created in the internal spaces to prevent contaminated air from entering. Body construction, to include the superstructure, consists of steel only. Aluminum alloy is used only for the smoke funnel casings. Anti-fragmentation armor about 25 mm thick is envisioned for protecting especially important command stations and combat posts. A combat information post is situated in the underdeck spaces, and not in the superstructure, as is the case in the majority of previous designs.

With the construction of these ships then, Japan will become the second country in the capitalist world to have such an expensive armament system as the Aegis, a factor which will more than double the construction cost of a single ship of this class, causing it to reach the tremendous sum of a billion dollars (up to 20 percent of the Japanese navy's annual budget). The combat capabilities of the fleet's escort force will grow significantly with the commissioning of the new destroyers. When compared with the existing Hatakadze and Tatikadze ships, for example, air target detection capability will double (up to 100 miles), anti-aircraft missile range of fire will triple, response time will be halved, and the number of targets anti-aircraft missiles can fire upon simultaneously will increase by a factor of six (to 12 targets).

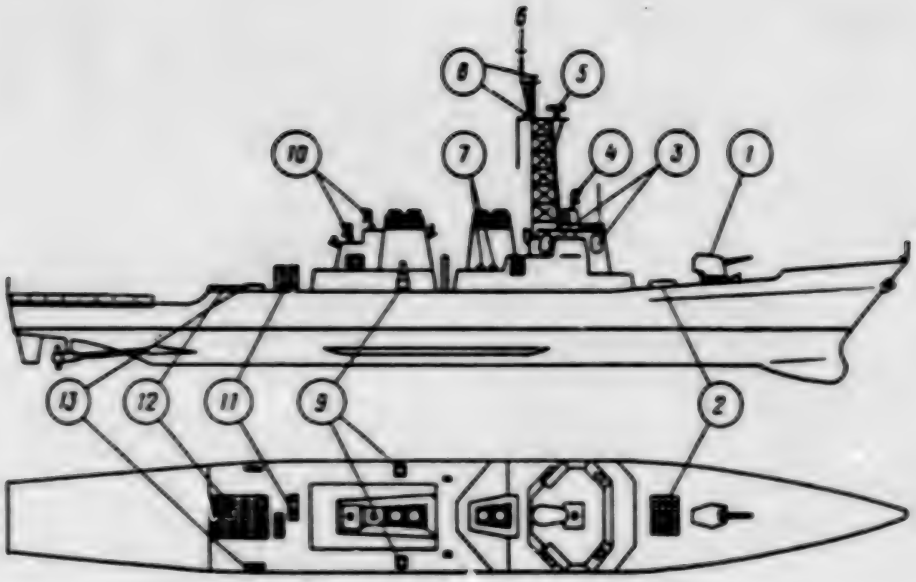

FIGURE 1 Design of the New Japanese Guided Missile Frigate

Key:
1. Single-barrel 127-mm cannon OTO Melara Mk 45
2. Mk 41 vertical-launch missile system (fore)
3. AN/SPY-1D radar antenna
4. AN/SPY-62 radar antenna (fore) for Mk 99 system
5. OPS-28 radar antenna for surface target detection
6. ORN-6 antenna (TACAN)
7. Mk 36 launcher (passive interference)
8. Electronic warfare, NOLQ-2 antennas
9. 20-mm Vulcan-Phalanx anti-aircraft system
10. AN/SPG-62 radar antennas (aft)
11. Harpoon missile launcher (4-container)
12. Mk 41 missile system (aft)
13. 324-mm triple-tube torpedo launchers

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Appropriations for Outfitting France's Armed Forces (1987-1991 Program)

18010301l Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 1, Jan 88 (signed to press 7 Jan 88) pp 77-83

[Article by Captain 2d Rank Yu. Shtokov: "Appropriations for Outfitting France's Armed Forces (1987-1991 Program)"]

[Text] The military-political leadership of France continues to spend billions of francs on arms despite prospects taking shape in Europe towards a lessening of confrontation. Pursuing her militaristic drive, France is surpassing even the most bellicose member nations of NATO. At the same time that NATO is requiring its members to increase their annual military budgets by at least 3 percent (only the United States and Norway are meeting this requirement), France is increasing her military outlays by 5-6 percent (7 percent in 1987). Speaking at a seminar of senior French and West German army officers, France's Defense Minister, A. Giraud, declared that "French-West German military cooperation should develop not contrary to the North Atlantic alliance, but within its framework, and we should instill in our American friends the conviction that they can best protect the camp of liberty if they maintain the presence of their conventional and nuclear forces in Europe." President F. Mitterrand expressed the thought more laconically, stating that "Western Europe must itself be engaged in providing for its own security in the framework of the alliance with the United States." France's military presence is becoming ever more manifest in remote regions—Chad, Lebanon, Senegal, Gabon, New Caledonia. France was one of the first to respond to the United States request to send a naval squadron thousands of miles away from the mother country to the

region of the Persian Gulf, where the situation is explosive even without such a presence.

The year 1987 was marked in France by intensive efforts to build a certain "European defense" based on the strengthening of military ties between France and West Germany, France and Spain. The idea of creating joint military formations, proposed by West German Chancellor H. Kohl, found staunch support here from people almost advocating a unification of the armed forces of the two countries. Having one of the most well-equipped armies in Western Europe and, more importantly, having her own strategic and operational-tactical nuclear forces, France is today already prepared to bring her West German neighbor under her "nuclear umbrella" and tomorrow to take on the role of nuclear guarantor for the other countries on the continent. Former French defense ministers C. Ernieu and P. Mesmer proposed the deployment of French neutron weapons on West German territory. Characteristically, even the leaders of the ruling Bonn coalition, anticipating the reaction of society, declined the offer.

The French press has noted that "Paris could supply the nuclear warheads for the missiles Bonn could build." What a convenient pretext for the revanchists on the Rhine who seeking a loophole so as to be able to build up their war potential!

Problems with the country's economy, presently far from enjoying the best of times, have been relegated to a secondary position. The study entitled "Social Data for 1987," published by the France's institute of statistics and economic research, predicts that the volume of industrial production will fall like it did before, foreign trade will become unbalanced, rates of price increase will grow, unemployment will rise and, finally, the standard of living will drop. France's 1987 economy could claim such "achievements" as 12 percent unemployment (10.5 percent in 1986), 3.25 percent price growth (2.2 percent in 1986), a 1986 budget deficit of 159 billion francs, and an industrial production output which continued to lose its competitiveness on the world market.

Such is the complex socio-economic environment in which the French government has proposed its latest (the sixth in post-war years) program for outfitting its armed forces. The new military legislation calls for allocations of 474 billion francs over the course of five years (1987-1991) for the acquisition of new weapons and equipment. This figure is calculated in fixed 1987 prices, i.e., it will increase automatically with inflation. For the first time, legislation involving long-range military planning has determined only the overall total of funding to be allocated, and the distribution of monies among individual programs may change during the course of their implementation. The basic programs for weapons and military equipment purchases for France's armed forces are as shown in the table. It should be noted in particular that the figure of 474 billion francs represents funds allocated only for development and procurement, constituting 35-40 percent of the country's total military expenditures. This amount does not include funding necessary for personnel upkeep, combat training, military construction and other armed forces expenditures, which will in fact amount to 1300-1400 billion francs. Monies allocated to outfitting the armed forces place a heavy burden on France's budget and, consequently, on the shoulders of those whose efforts produce the national wealth. Indeed, the cost of just one nuclear ballistic missile submarine (without missiles) comes to 3.5 billion francs. A general-purpose nuclear submarine costs 1.2 billion, Mirage-2000 tactical fighter—13.5 million, and AMX-30 tank—8 million francs.

Funds allocated for implementation of the five-year program are distributed as follows: military space programs and the development and outfitting of nuclear forces—132.2 billion francs (27.9 percent of the total); ground forces—113.0 billion (23.8 percent); air force—116.4 billion (24.5 percent); navy—103.9 billion (22.0 percent); gendarmerie—8.5 billion (1.8 percent).

The five-year program also determines annual expenditures for the purchase of weapons and equipment: 1987—84.13 billion francs; 1988—89.10 billion; 1989—94.45 billion; 1990—100.12 billion; 1991—106.20 billion. The principle essence of the country's military doctrine remains as before a strategy of "restraint and deterrence," based on the presence in France of her own nuclear weapons.

Plans for developing and improving France's nuclear forces envision implementation of eight priority programs. Preparatory efforts are underway for construction of a new-generation nuclear ballistic missile submarine possessing more sophisticated hydrodynamic characteristics, which will result in its noise profile being less perceptible than that of the ocean background. This feature will substantially enhance France's ability to maintain secrecy. The submarines will be armed with M4 ballistic missiles, range—4500 km, each with six 150-kt multiple, independently retargetable warheads. The submarines will later be equipped with new M5 missiles having nine independently retargetable warheads. The new submarine has a displacement while surfaced of 12,700 tons, while submerged—14,200 tons. Its length is 138 meters, body diameter—12.5 meters. The crew consists of 100-110 men.

Within the framework of the five-year program, 20.6 billion francs has been allocated for construction of this new submarine and the entire program of development and construction of a planned six submarines will cost the government 68 billion francs. The first submarine of the new generation should enter the navy's inventory in 1994. By the middle of the 1990's the navy plans to have seven such submarines, outfitted with a total of 112 missiles, containing about 600 nuclear warheads.

The French navy currently has six nuclear ballistic missile submarines: "Redoubtable" (commissioned in 1971); "Terrible" (1973); "Foudroyant" (1974); "Indomitable" (1976); "Tonnan" (1980); "Inflexible" (1985). The first five were each outfitted with 16 M20 missiles (range—3200 km) and 1-megaton monoblock nuclear warhead. Their scheduled modernization began in 1985, upon completion of which they will be reoutfitted with M4 missiles and equipped so as to enable underwater launch of the Exocet anti-ship missile through the torpedo tubes.

The modernization program is estimated to cost 14.5 billion francs, including 8.1 billion proposed for this purpose in 1987-1991. The reoutfitting is expected to be achieved as follows. "Redoubtable" underwent repair in 1986, will not be modernized, will remain in the fleet until 1994 and then be delivered to the reserves. Modernization of the "Tonnan" was completed in 1987; work on "Indomitable" is scheduled for completion in October 1989; "Terrible"—June 1990; "Foudroyant"—April 1992.

There is yet another priority program for the development of France's strategic nuclear forces—the new sea-based M5 ballistic missile. Work on this project has just begun and it would be premature to comment on its characteristics. Plans call for these missiles to be mounted on six nuclear submarines (96 missiles) which will be commissioned after 1993. It is expected that 73 billion francs will be earmarked for implementation of the M5 missile program, of which 1.65 billion will be charged to the five-year program under discussion.

The five-year program does not neglect land-based nuclear forces. Plans call for development of the S-4 mobile missile system to replace medium-range ballistic missiles located in silos on the Albion Plateau. Outfitted with multiple warheads, the missile will enter the inventory after 1991. The cost of the program is approximately 30 billion francs, of which 6.4 billion will be allocated prior to 1991.

The third component of France's strategic nuclear triad is aviation, which includes AN-22 atomic bombs and ASMP air-ground, medium-range, guided missiles with a nuclear warheads up to 300 kt in yield. Plans call for these missiles to be mounted on Mirage-4 medium strategic bombers, Mirage-2000N fighter-bombers and Super Etandard deck-landing fighters. Allocations of 3.2 billion francs were made for the procurement of 90 missiles and 30.3 billion for equipping the air force with 75 Mirage-2000N aircraft (of which 14,3 billion applies to the five-year plan). The first aircraft of this type entered the inventory in 1986 and became part of the combat force in 1987.

Turning to the tactical sphere, the Pluton missile, part of the ground forces inventory since 1974, will be replaced after 1991 with the new Gades nuclear missile system, whose major component will be a solid-fuel surface-to-surface ballistic missile with inertial guidance system. Compared with Pluton, the Gades has greater accuracy and range (up to 350 km). Nuclear warhead yield varies from 10 to 25 kt. A total of 90 missile systems are planned for procurement. Programmed costs for development and procurement will reach 13.6 billion francs, of which 7.7 billion is expected to be allocated in 1987-1991.

In order to modernize the communications system for strategic nuclear forces and increase their protection from the effects of electromagnetic impulse of a nuclear burst, the Astarte long-wave communications system is being developed (basic equipment is installed on board four aircraft). This system is designed primarily to enhance the reliability of communications with nuclear ballistic missile submarines. The five-year program France has adopted for outfitting her armed forces justifies the need to possess chemical weapons and their possible employment in a war, and provides for the allocation of additional funds for this purpose.

A new section has appeared for the first time in the long-term plan of development for France's armed forces: the use of space for military purposes (although satellites intended for military use have been under development several years already). Certain French military-political figures, such as state counsellor M. Aureac, military advisor to the prime minister, are already openly fighting for preparations for a "star war," which they say could break out in 30-35 years. According to this "expert," "no country that refrains from participating in its preparations can aspire to any role whatsoever in peace." Many representatives of the military-industrial complex worked intensely to convince French members of parliament of the necessity to transfer military preparations to the space arena, seeing in this yet another way to pump money out of the state's budget. As a result, 9.2 billion francs was allocated for the militarization of space in the five-year program, including 2.6 billion for implementation of the "Helios" program and 3.9 billion for the "Syracuse-2" program.

The "Helios" program entails the building of a system for optical reconnaissance of the Earth's surface to evaluate the military threat. The system includes a satellite about two tons in mass, containing optical apparatus with high-resolution capability, launched into helio-stationary orbit. It also has a control and data-processing station. Civilian satellite components (of the "Spot" series) will be used in constructing this satellite.

The "Syracuse-2" program invloves the establishment of a national regional system of communications based on a satellite placed in geo-stationary orbit and designed for communications with the armed forces in territories overseas and rapid deployment force units.

The 1987-1991 program provides for allocations of 113.0 billion francs for outfitting the ground forces. These funds are earmarked for the implementation of six major programs.

The LeClerc (named after the famous French World War II general) main battle tank will encompass, in the opinion of foreign military experts, all the major achievements of modern tank construction and will exhibit tactical and technical characteristics making it one of the best in the world. It will be armed with the 120-mm, automatic-loading, smooth-bore cannon and equipped with automatic fire control system for day and night conditions, using electronic ballistics computer, infrared equipment, laser rangefinders, and modern systems of navigation and target designation. The tank will become part of the ground forces inventory in 1991. Procurement of 1100 tanks is planned. The cost of scientific research and experimental design work and procurement will be 45 billion francs, of which 3.7 billion are included in this five-year program.

Along with development of the new tank, AMX-30B2 tank deliveries continue. By the end of the five-year plan, 683 tanks of this type will have been issued to troop units. Appropriations for this purpose amount to 6.1 billion francs (total program cost is 12 billion).

Development of a new combat helicopter is one of the most prominent programs in the five-year plan for equipping the ground forces. Preliminary studies and negotiations on its development have already been underway for several years. The project, initially designated RAN-2/NAR-2, will apparently be a joint French-West German design. The chief mission of the new helicopter is to provide fire support to the ground forces and engage enemy tanks and helicopters. Its main armament is a third-generation anti-tank missile system and air-to-air missiles. Serious disagreement arose, however, between the French and West German armed forces leadership with regard to the helicopter's tactical and technical characteristics and its armament. Discussions regarding project implementation first intensified, then diminished again. It seemed that negotiations had reached a dead end. However, after intense discussion was begun at the highest state level in the summer of 1987 on creation of a joint French-West German brigade and strengthening the Paris-Bonn military alliance, both ministers of defense—A. Giraud and M. Worner—made mutual concessions and announced that they had decided to build the combat helicopter. Upon reaching agreement as to the technical outfitting of the helicopter, they also managed to resolve problems related to financing its development and production. The project should be financed in equal shares. It will cost the French treasury about 25 billion francs. Each country will receive approximately 200-220 helicopters. France has allocated 3.8 billion francs to project implementation prior to 1991. The future combat helicopters are expected to be delivered into the inventory in 1997.

France is participating in a joint program of development and production of the Multiple Launch Rocket System (MLRS—for details on RS30 production in Western Europe, see ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, 1987, No 4, pp 66-67) with U.S., West German, British and Italian firms. Beginning in 1989 France intends to equip her armed forces with 25 such systems, appropriating 16.4 billion francs for this purpose. This amount includes 4.5 billion allocated prior to 1991.

Both towed and self-propelled versions of 155-mm cannon have been joining the French army inventory since the beginning of the 1980's (TR and GCT, the latter receiving the designation AU F1 in the French armed forces). The AMX-30 tank chassis provides the base for the self-propelled variant of this cannon. Procurement of this gun will continue in coming years. It is planned to have purchased 350 by the end of 1991 (500 will be acquired in all). Allocations of 8 billion francs have been made for this purpose.

The French tank armor industry is producing armored vehicles (AMX-10P infantry fighting vehicle, AMX-10RC and Panar combat reconnaissance vehicles, armored personnel carriers) which are then entering the ground forces inventory. Up to 20 percent of the funds intended for ground forces scientific research and experimental design work are allocated annually to producing these vehicles. More than 17,000 infantry fighting vehicles, combat reconnaissance vehicles, armored personnel carriers, and other vehicles of this class are intended to be procured to enhance troop mobility and maneuverability, especially that of the recently created "rapid deployment forces." It is the opinion of the military leadership that implementation of this program will significantly enhance mobility and maneuverability in the ground forces.

Efforts are underway in France to develop a battlefield observation system based on the side-looking radar ORCHIDEE (Observatoire Radar Coherent Heliporte d'Investigation des Elements Ennemis). The radar will be mounted on helicopters (the AS-332 Super Puma, in particular). This system is expected to cost approximately 6 billion francs, of which 1.3 billion will be spent prior to 1992.

Priority in equipping France's armed forces has been shown to the air force, which is to receive 116.4 billion francs in allocations, more than one-third of the funds earmarked for conventional arms. Allocations for air force procurement will show a higher growth rate (8 percent) than the average for the armed forces.

Of the most significant programs envisioned in the five-year plan, four belong to the air force. Allocations of 22.5 billion francs will provide for continued deliveries of Mirage-2000 air defense fighter aircraft to air force

units. The aircraft has been produced by the Dasso-Brege corporation since 1983. France intends to procure 225 for air force units at a total cost of 63 billion francs.

The most expensive and "prestigious" air force program is for the development and stationing in combat units of 250 future combat aircraft. Allocations of 172 billion francs will be made for this purpose, 5.4 billion of which will come from the 1987-1991 program. The new aircraft is being built based on the Raphael experimental aircraft (for details on the Raphael experimental fighter, see ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, 1987, No 5, pp 44-45), developed by Dasso-Brege. Flight tests of the Raphael began in 1986 and the air force has been basically satisfied with the results. Two prototypes will be developed—ACT (tactical combat aircraft) and ACM (navy combat aircraft). Although the matter of outfitting the navy is still an open question (the possibility remains of selecting an aircraft manufactured by a foreign firm), it is hardly likely that the French aircraft construction industry will let this order out of its grasp.

These first two programs (Mirage and Raphael) account for 78 percent of the funding allocated to the air force.

The question of acquiring three-five long-range radar detection aircraft has repeatedly been raised in discussions of the annual military budget. Each time it has been postponed to the next fiscal year since the sum of one billion francs for a single aircraft has seemed huge, even to legislators. In February 1987 a contract was concluded with the American Boeing corporation for delivery to the French air force of three E-3A Sentry airborne warning and control aircraft at a cost of about 4 billion francs, and in August articles appeared in the French press concerning a contract for purchase of one additional aircraft. The total amount allocated to acquisition of this system will reach 5.75 billion francs. The first three aircraft should enter the combat inventory in 1990-1991.

In order to increase the mobility of the ground forces, first and foremost the rapid deployment forces, within the theater of combat operations, there is the task of acquiring a medium military transport aircraft. The type of aircraft has not yet been selected. The possibility of purchasing a foreign model is under consideration, but in all likelihood, selection will remain with a French aircraft of the ATP-42 variety or one based on it. About 2 billion francs have been allotted for implementation of this program. Plans call for the purchase of 25 aircraft of this class, of which 20 are expected to enter the inventory prior to 1992. With respect to transporting troops long distances, it is planned as before to utilize the passenger and transport aircraft of civilian airline companies. Neither has aircraft missile armament been forgotten.

About 103.9 billion francs are allocated for implementation of seven programs for outfitting France's naval forces. Priority programs include construction of the general-purpose nuclear aircraft carrier "Charles de Gaulle" and procurement of Atlantic-2 land-based patrol aircraft.

France's naval forces presently include two aircraft carriers—the "Foche" and "Clemenceau." It was planned initially to replace them with two new nuclear-powered carriers. The decision has now been made, however, to leave the "Foche" (which underwent modernization and is armed with sophisticated weapons systems, to include the Naval Crotal air defense missile system) in the naval force and build just one nuclear aircraft carrier. Cost of the new carrier will be approximately 13.9 billion francs, including 5.5 billion attributable to the five-year program. Commissioning is programmed for 1996. Up to 40 aircraft and helicopters will be based on the new carrier, including aircraft carrying nuclear weapons. Apparently, the French navy is temporarily holding back from constructing a second nuclear aircraft carrier in order to accumulate operational experience from deployment of the first, and intends to make design changes as necessary.

Allocations of 10.7 billion francs have been made for procurement of a new generation of land-based patrol aircraft, the Atlantic-2. It is proposed to acquire 10 aircraft prior to expiration of the five-year term, and then another 17. Procurement cost for all the aircraft will amount to 26.3 billion francs. Other programs for outfitting France's naval forces entail the construction of five general-purpose nuclear submarines of the Rubis class (4.9 billion francs allocated), minesweeper vessels (1.8 billion), and guided missile destroyers of the Kassar and George LeGuy class (11 billion).

France's program of outfitting and equipping her armed forces for 1987-1991 shows that her military-political leadership has no intention of abandoning a policy of increasing the country's military potential.

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Turkey—Its Physical Geography, System of Government, Economy and Infrastructure

18010301m Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 1, Jan 88 (signed to press 7 Jan 88) pp 83-92

[Article by Colonel V. Elin: "Turkey—Its Physical Geography, System of Government, Economy and Infrastructure"]

[Text] Turkey (the Republic of Turkey) is situated in western Asia and southeastern Europe. Almost 97 percent of its territory is located on the Asia Minor peninsula (a second designation—Anatolia—has been used for the entire Asian portion of the country) and about 3 percent is at the southeasternmost portion of the Balkan Peninsula (eastern Thrace). The strategic importance of such a geographical position is evident when we consider

that this region forms a juncture of international overland, air and maritime routes leading from three continents—Europe, Asia and Africa.

Foreign military experts pay attention to the fact that Turkey serves not only as a geographical gateway, but a political one as well to the Middle East, as is a connecting link with Islamic states. They also stress the extremely important role played by the Black Sea straits in the plans of the aggressive North Atlantic alliance. As noted in the magazine "NATO'S SIXTEEN NATIONS," Turkey is located next to the "source of the life blood of the developed Western countries"—the oil-rich region of the Persian Gulf. Turkey accounts for more than one-fourth of the total area occupied by the European NATO countries and 37 percent of the land border NATO shares with nations of the Warsaw Pact. The United States and NATO consider all of this a "convincing argument" in support of establishing a "unique strategic springboard" in Turkey. They attempt to justify this line of reasoning with standard references to the non-existent "Soviet military threat," and strive in every way possible to thrust their adventuristic policies upon this country and turn its territory into a "trampoline" for implementation of their aggressive aspirations.

As a result of a victorious national-liberation movement in 1923, Turkey became the first country in the Near and Middle East to form a bourgeois republic. Under the leadership of the prominent state figure and military leader, Mustafa Kemal Ataturk, who worked for national independence and the development of friendly relations with the Soviet Union, progressive, bourgeois-democratic reforms took place in the country. After Ataturk's death in 1938, and especially after World War II, Turkey's foreign policy orientation changed noticeably.

Agreements concluded with the United States in 1947 and 1948 marked the beginning of Ankara's orientation on Washington. Relations between the two countries grew closer with Turkey's entry into the NATO alliance in 1952 and into CENTO (which became defunct in 1979) in 1955. Turkey took part in the Korean War in order to prove its dedication to the "interests of the Western world." Agreements between the United States and Turkey on cooperation in the military sphere have been concluded since 1959, one right after another. In 1987 the term of the latest of these agreements was extended to December 1990.

Turkey's long-term pursuit of pro-Western policies and active participation in NATO (its military expenditures comprise more than 20 percent of its budget) resulted in economic stagnation at the end of the 1970's, a rise in unemployment, and other difficulties. Class interest conflicts became exacerbated and extremists became active. The senior army leadership effected a military coup in 1980 and re-formed the country's national security council, which assumed supreme power for the first time. Measures were undertaken against neo-Fascist and leftist terrorist groups, but the main blow was inflicted against the left-democratic and union movement. The country's political system was reorganized and power centralized under military control. A new constitution was adopted in 1982, investing the head of state with broad legislative and executive powers.

Turkey's foreign policy is oriented on the development of cooperation with the United States and the strengthening of ties with NATO. Its attitude towards basic international problems is generally determined by its active participation in NATO and its dependence on military and economic assistance from the Western countries.

Physical geography. Turkey's general outline resembles a rectangle extending 1600 km west to east and 550 km north to south (see Fig 1). It occupies an area of 780,000 square km, has 2632 km of land border, 5483 km of maritime boundary, and a coastline extending 7200 km. Turkey borders the Soviet Union (610 km of dry land), Bulgaria (269 km), Greece, Syria, Iraq and Iran. In accordance with the 1923 Treaty of Lausanne, Turkey's maritime border with Greece passes close to the Turkish coast. The majority of islands situated off its coast, therefore, belong to Greece.

On the south Turkey is washed by the Mediterranean Sea, on the west by the Aegean, and on the north by the Black Sea and Sea of Marmara, the latter being located entirely within Turkey's borders. The only sea lanes allowing countries of the Black Sea basin egress to the ocean are the Bosphorous Straits (30 km in length, 700 m—least width, 20 m—least depth of channel for seagoing vessels) and Dardanelles (120 km, 1300 m, 29 m, respectively). Use of the straits is regulated by the Montreux Convention of 1936, which provides merchant ships of all countries with free passage through the straits in time of peace and war. During peacetime, Black Sea powers may sail warships of any tonnage here, provided they first notify the Turkish government. Warships of other countries must abide by limitations in class and tonnage. In the event Turkey participates in a war, or even if it considers itself under immediate threat of war, it has the right to permit or deny passage to any warships. For a war in which Turkey does not participate, the straits must be closed to passage of warships belonging to any of the belligerents.

With respect to terrain relief, Turkey is a mountainous country with average elevations of more than 1000 meters above sea level. About one-fourth of the country is elevated between 1500 and 2500 meters. The mighty ranges of the Pontus mountains (extending more than 1000 km) stretch along the Black Sea coast, comprising almost parallel chains with the narrow valleys that separate them. The highest peaks are located in the eastern part of the country (Mt Kachkar—3937 m). In the north, the Pontus Mountains fall off sharply to the sea, leaving a 5-10 km coastal strip which widens to 60-70 km only at the mouths of major rivers.

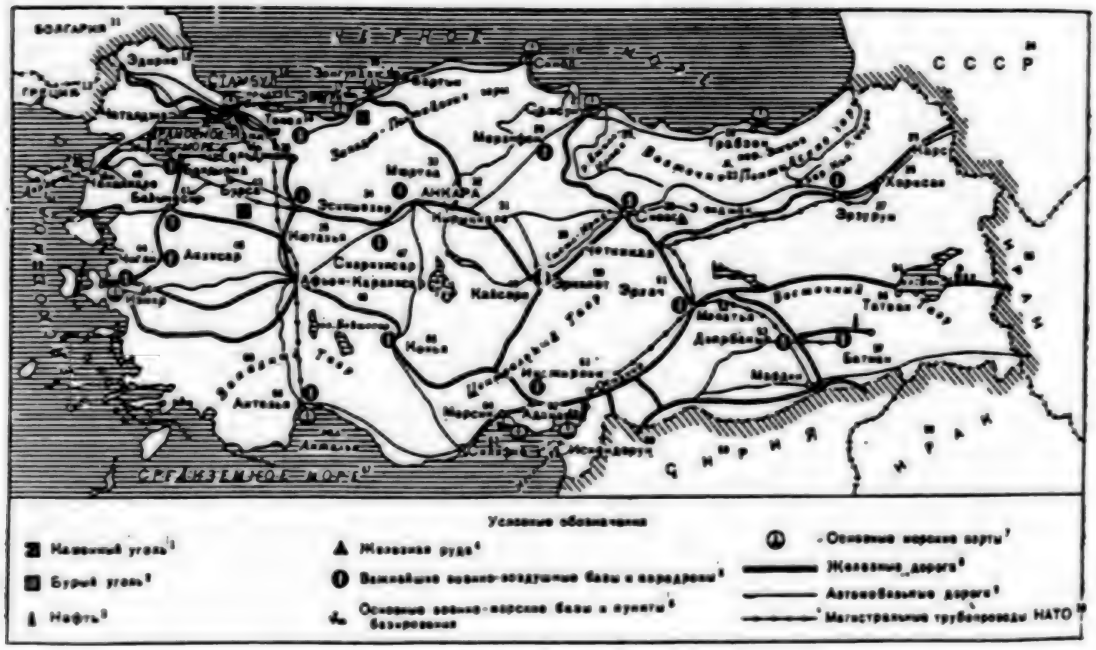

FIGURE 1 Turkey

Key:
1. Bituminous coal
2. Lignite
3. Oil
4. Iron ore
5. Major air force bases and airfields
6. Main naval bases and basing facilities
7. Major ports
8. Railroads
9. Roads
10. NATO main pipeline
11. Bulgaria
12. Edirne
13. Greece
14. Istanbul
15. Bosphorous Straits
16. Topel
17. Eregli
18. Zonguldak
19. Sinop
20. Merzifon
21. Samsun
22. Trabzon
23. Pontus Mts.
24. USSR
25. Kars
26. Horasan
27. Erzurum
28. Sivas
29. Yeshil-Irmak River
30. Kizil-Irmak River
31. Kirikkale
32. Ankara
33. Murted
34. Eskisehir
35. Kutahya
36. Golcuk
37. Izmit
38. Sea of Marmara
39. Dardanelles
40. Canakkale
41. Balikesir
42. Bandirma
43. Bursa
44. Cigli
45. Akhisar
46. Izmir
47. Sivrihisar
48. Afyon-Karahisar
49. Kayseri
50. Erkilet
51. Erhac
52. Malatya
53. Diyarbakir
54. Lake Van
55. Iran
56. Tatvan
57. Batman
58. Iraq
59. Syria
60. Iskenderun
61. Incirlik
62. Adana
63. Silifke
64. Mersin
65. Konya
66. Antalya
67. Mediterranean Sea
68. Western Taurus Mts.
69. Aegean Sea

The complex mountain system known generally as the Taurus Mountains extends along the southern coast of the Mediterranean. Its western portion—the Likis Mountains—arcs around the Bay of Antalya and coastal lowlands. Their high ridges (over 3000 m) are separated by valleys, along which travel to the interior of the country is made relatively easy. The Central Taurus Mts. approach the coastline and form narrow coastal plains only in certain areas. The mountains turn to the northeast in the vicinity of the city of Mersin; the extensive Adana plain lies to the south. The Eastern Taurus extends to the south of the Murat River and Lake Van. Gorges of the Tigris and Euphrates rivers cut into the mountain range, serving as important means of communication.

East of the Karasu River lies the part of the country having the highest mountains and most difficult terrain. Great Mount Ararat (5165 m) is located in eastern Turkey and is the country's point of highest elevation. The mountain ridges of western Anatolia are relatively low. Only certain individual peaks rise to 2000 meters. The seacoasts are mostly elevated, slightly jagged in the north and south, and heavily broken up into bays in the west.

The Asia Minor Peninsula is situated in a seismologically active region. Earthquakes therefore occur frequently, especially in the east. Some distinguish themselves by virtue of their great destructive force.

Although Turkey is located in the subtropical climatic zone, its mountainous relief and complex air currents produce sharp contrasts between the coastal and interior regions. Turkey has a mediterranean climate in its coastal regions (in the south and west) with dry summers. The climate in the northeastern region is damp, continental in the interior areas. Average temperature in the lowlands is 5-10 degrees Celsius in January and 25-30 degrees in July, reaching 40 degrees in calm weather. The temperature is somewhat lower for the interior plateaus: in January—from 0 to -15 degrees Celsius, in July—15 to 22 degrees. In eastern Turkey (in the mountains) frost temperatures reach -35 degrees Celsius.

The greatest amount of precipitation occurs on the seaward slopes of the Pontic and Taurus mountains (1000-3000 mm); precipitation in the dry interior regions amounts to just 200-600 mm per year.

Turkey's network of rivers is fairly dense. For the most part they are found in the mountains, shallow and full of rapids, with varying water levels and, as a rule, unnavigable. Floods are possible after heavy downpours. The rivers of western Anatolia are relatively short; those in the east—longer and deeper. The sources of the Tigris, Euphrates, Kura and Araks rivers are located here. The river having the greatest abundance of water in eastern Thrace is the tributary Maritsy—Ergene River (280 km). The longest river is the Kizil-Irmak (1151 km), flowing into the Black Sea. Turkey has many lakes. The largest are salt-water Lake Van in the high mountains (area exceeds 3700 square km) and shallow salt-water Lake Tuz (up to 2500 sq km), whose depth and dimensions change with seasonal and annual fluctuations. A group of fresh-water lakes is found in the northwest.

Population and system of government. Turkey has a population of 51.4 million (end of 1986), of which 50.5 percent are males. The birth rate has decreased in recent years, but so has the death rate. The average annual rate of growth, therefore (according to various souces), is from 2.1 to 2.8 percent. Turkish economists estimate that by the end of the century the population may reach 67 million. The latest census data shows that Turks comprise a young nation (38 percent of the country's inhabitants are under 14 years of age). Today Turkey has more than 120 colleges and universities. Thus, the general education level is increasing, although more than 30 percent of the adult population is illiterate. Illiterate women outnumber illiterate men by a factor of about 3.5. Immigration is primarily to the countries of Western Europe and, since the end of the 1970's, to countries of the Near East. Approximately two million Turkish citizens work abroad.

The average population density is over 65 individuals per square kilometer. This is lower than that of Europe (94) and Asia (76). The distribution is not equal, however. The most densely populated regions are Istanbul (up to 700 persons per sq km), the coastal regions of the Sea of Marmara and Aegean Sea, and the Black Sea regions. The most sparsely populated areas (5-10 persons per sq km) are the arid plateau southwest of Lake Tuz and the high mountainous region south of Lake Van. The number of city dwellers is constantly increasing. In 1950, 18.5 percent of the people were city dwellers; today they constitute about 50 percent. The major cities include Istanbul (over 3 million inhabitants), the capital Ankara (2 million), Izmir (over 800,000), Adana (650,000), Bursa (over 500,000) and Gaziantepe (about 400,000).

Turks comprise more than 90 percent of the population. The most numerous national groups in addition to them are the Kurds (about 7 percent), arabs, Georgians, Laz, Armenians, and others. The national language is Turkish, based on the Latin alphabet. The majority of the population is Musselman (who profess the Sunni form of Islam). Although Islam ceased to be the state religion 60 years ago, its dogmas still exert a strong influence on the minds and customs of the people. As noted in the Turkish press, a "rebirth of Islam" has been observed in recent years in many spheres of life and social activity.

With respect to form of government, Turkey is a republic. The president is the chief of state (and the supreme commander of the armed forces), elected by parliament for a seven-year period. Highest legislative power is invested in the single-house parliament (Majlis) which consists of 450 deputies elected to a five-year term.

Executive power is exercised by the president and government (council of ministers) headed by a prime minister. A national security council, consisting of the president, prime minister, chief of the general staff, minister of defense, minister of foreign affairs and commanders of the services of the armed forces, plays an important role in the political life of the country. The supreme military council, an advisory organ to the president, is of great importance. Unlike the national security council, this body has no civilian members.

Permanent members of the supreme military council include the commanders of the services of the armed forces and all military leaders in the rank of army general. This body is headed by the chief of the general staff.

The largest administrative division is the bolge (district). There are eight of these in all, with centers at Adana, Ankara, Diyarbakir, Izmir, Kayseri, Konya, Istanbul and Erzurum. The bolge is divided into several provinces (formerly designated vilayet), of which there are 67 in all.

Main political parties and trade unions. The Motherland Party, founded in 1983, is a right-wing party representing the interests of the prominent bourgeoisie. The Social Democratic People's Party espouses the positions of bourgeois social reformism. It was founded in 1985 upon the merging of the Social Democratic Party and People's Party. The True Path Party, established in 1983, is the right-wing party of the mid-level bourgeoisie and some of the prominent bourgeoisie and landowners. The Left Democratic Party has been functioning since 1985.

The Communist Party of Turkey (founded in 1920) leads the struggle of the workers against imperialism, major landowners and merchant bourgeoisie (who act as commercial go-betweens with foreign companies in the domestic and foreign market) and in favor of the unification of all progressive, patriotic forces. It has been outlawed since 1923. The Workers' Party of Turkey carries on the struggle to unite all leftist forces in the struggle for peace, independence, democracy and socialism. It was formed in 1961, outlawed after 10 years, and reinstated in 1975. Since the 1980 military coup, this party also has been operating illegally. In 1984 six left-wing parties, including the Communist Party of Turkey, proclaimed creation of the Left Unity of Turkey and Turkish Kurdistan, with the aim of conducting a joint struggle in the framework of a broad front of democratic and peace-loving forces to replace the country's dictatorial regime with a democratic government. In October 1987, the Communist Party and the Workers' Party of Turkey declared they would merge and established the United Communist Party.

The largest trade union permitted to remain active after the 1980 coup is the Confederation of Workers' Unions of Turkey. The 1982 constitution prohibits unions of state employees, union advocacy of political demands, and political or general strikes.

The economy. Turkey is an agrarian-industrial country whose economy depends to a significant degree on foreign capital, primarily that of the United States and West Germany. The volume of industrial production amounts to about 0.3 percent of the industrial production output of the capitalist states. According to data published by the Turkish Association of Industrialists and Businessmen, the average annual growth in gross national product (GNP) for 1981-1985 amounted to 4.6 percent. In 1986, when industry and agriculture were confronted with substantial difficulties as compared with the previous year, the GNP increased 8 percent and amounted to 57.6 billion U.S. dollars. Within the production framework of GNP, industry accounted for 28.2 percent, agriculture—20.4 percent, construction—5.5 percent, and transportation and communications—8.6 percent.

In 1985, implementation of the fifth five-year program for economic development was begun. It envisions raising the average annual GNP rate of growth to 6.3 percent, industrial output to 7.5 percent, and agricultural output to 3.6 percent. It should be noted in particular that, along with the growth in recent years of capital investments in the Turkish economy (primarily in industry) and increased foreign currency in the country, the national debt is close to 40 billion dollars, the foreign trade deficit is reaching 3.5-4 billion, and the rate of growth of inflation (about 30 percent in 1986, almost 40 percent in 1987) and level of unemployment (currently 4 million) continue to be significant.

The state sector plays a significant role in the economy. The state owns all the railroad transport and means of communications. It controls almost all production of electrical energy, about three-fourths of the credit and banking system, two-thirds of the mining/extraction output, one-third of the manufacturing industry, and 50 percent of maritime transport.

Raw material and energy resources. Turkey contains a variety of useful minerals but the means of their extraction is not yet sufficiently developed. About 7 percent of the overall industrial production, or less than 2 percent of the GNP, is attributable to the mining/extraction industry, employing 128,000 individuals.

Bituminous coal (Zonguldak deposits) and lignite (Tavsanli, Tuncbilek and other areas) are mined in Turkey. Oil/petroleum production takes place mainly in the east and southeast around Batman and Garzan. Oil exploration efforts in the Aegean have not yet yielded practical results. Iron ore (central and western Anatolia), manganese, copper and tungsten ore (in the northwest, on the slopes of Mt. Uludag), chromites, bauxite (Beysehir) and mercury are mined. Natural gas is extracted. Marble should be noted among the non-ore minerals. One of the major areas for its extraction is the Island of Marmara (from which the Sea of Marmara gets its name). Sulfur and saltpeter, stone salt, sea and lake salt are also mined.

Production and extraction of the main varieties of useful minerals in 1986 can be characterized in the following data (figures are in thousands of tons, 1981 data is added in parentheses for comparison purposes): bituminous coal—7281 (7285); lignite—36,524 (18,951); oil—2393 (2364); iron ore—4250 (2935); chromium ore—764 (574); tungsten concentrate—618 tons. Western experts believe that, on the whole, reserves of useful minerals are sufficient to satisfy the needs of Turkey's developing industry, and several ores and metals (blister copper, aluminum) are exported. At the same time, certain raw material items must be imported—iron ore and coke, for example. Nor is the demand met for fuel and energy resources—the requirement for crude oil exceeds its production by a factor of 6-7 and is satisfied by importing it from Iraq, Iran, Saudi Arabia and Libya. Five oil-refining plants operate within Turkey, processing overall about 28 million tons of crude oil each year.

Fuel energy resource consumption is distributed as follows: bituminous coal and lignite—30 percent; petroleum products—over 40 percent; water power—10 percent; wood and other varieties of fuel—the remainder. The largest thermal power stations are located at Ambarli, Yatagan and Seyitomer; the major hydroelectric power plants—at Keban, Hasan-Ugurlu and Gokcekaya. In 1986 the country produced 40 billion kilowatt-hours of electrical energy, in 1981—25 billion. In 1986 British, Canadian and Turkish companies entered into a consortium to build the first nuclear power station in Turkey not far from the city of Mersin. It is scheduled to come on line in 1992.

The manufacturing industry accounts for 84 percent of the country's industrial production (23.8 percent of the GNP) and employs over 1.9 million individuals. Production capacity in 1986 averaged 73 percent. The most developed branches are in textiles, food (about one-third is for export), chemicals and production of construction materials. Ferrous and non-ferrour metallurgy satisfies to a significant degree the country's domestic requirement for metals. Major cast iron and steel production plants operate in Eregli, Iskenderun and Karabyuk; copper smelting—in Samsun, Ergani, Murgul and Istanbul. Lead-zinc integrated works are in Kayseri and the country's only aluminum plant is in Seydisehir. Production figures for 1986 (1981 data in parentheses) are as follows: cast iron—3.4 million tons (1.7); sheet metal—3.6 (1.7); blister copper—25,000 tons (27,000 in 1985).

The demand for ground transportation (cars, buses, small and medium trucks, commercial trucks), agricultural machines and vehicles, electrical products, chemical raw materials, and mineral fertilizers is met to a great extent by in-country production. Certain kinds of metal-working lathes and looms are produced. Vehicle and tractor assembly plants are located in the Istanbul area, in Ankara, Konya, Bursa, Izmit and Izmir. In 1986, 76,000 light wheeled vehicles, 15,200 freight vehicles, more than 10,000 buses (including mini-buses) and 32,000 tractors were produced. Diesel locomotives, passenger and freight cars are built in the cities of Eskisehir, Adapazari and Savas. Medium-displacement merchant vessels are constructed at shipyards on the outskirts of Istanbul, Izmit, Izmir and Eregli.

It must be stressed that production capacity of the most modern branches of industry is controlled by combined Turkish and foreign companies and most intricate products are manufactured under foreign license. While not holding sway over the Turkish economy, foreign capital nonetheless is its important component. Industrial production is concentrated—more than 65 percent of the people engaged in industry are in eight of the largest cities. The industrial region around Istanbul is especially dominant. Development is disproportionate in the western and eastern provinces.

Agriculture is an important branch of the Turkish economy and employs 9.3 million people (57.5 percent of the economically active population). Although its share of the GNP is falling somewhat, it continues to remain at a high level. The land is basically in the hands of powerful landowners and a substantial portion is cultivated by tenants. Western economists believe that Turkey's agricultural industry generally meets the country's demands for agricultural products and raw materials.

Plant-growing is considered the mainstay of Turkey's agricultural industry. Turkey leads the capitalist countries of Asia in barley and beet production and is second in wheat. Agricultural production for 1986 (in million tons; 1981 figures given in parentheses) amounted to: wheat—19 (17); barley—7 (5.9); rye—0.35 (0.53); maize—2.3 (1.2); sugar beets—10.6 (11.2). Leguminous plant cultivation is prominent in providing food and fodder. Sheep breeding is the primary branch of livestock-raising in most areas. Turkey is becoming one of the ten most productive nations in the world with respect to sheep breeding (about 49 million head) and is in second place for angora goats (approximately 3.5 million). Goats number almost 18 million overall. The number of cattle is reaching 15 million head. There is widespread use of horses, donkeys and mules in rural areas.

Military industry. After World War II, most of Turkey's arms and military equipment was obtained from the Western countries, insofar as potential for their production in the country was limited. Although in recent years suppliers of modern armament and equipment remain as before the NATO member nations, the Turkish military-political leadership has reexamined its policies in this sphere and embarked upon several programs to develop its own military-industrial base, striving to shift from the import of finished products to individual assemblies, production equipment and technology. Foreign experts believe that in so doing, Turkey intends not only to satisfy its domestic requirements to a large degree, but

also to introduce certain products on the world market, primarily for the Islamic nations which, lacking a developed scientific and technological base, would find this a difficult task.

Efforts undertaken by ruling circles to de-nationalize industry are also being reflected in military production. In November 1985, an administration for defense industrial development was created and, subordinate to it, a fund intended to become an additional source of monies for stimulating the private sector of the defense industry and attracting foreign firms, along with their advanced technology. At the end of 1986 the fund's assets totaled 500 million dollars. Most of the enterprises producing military arms and equipment belong to the government.

The aviation industry is comprised of aircraft assembly and repair plants and shops. In accordance with an American-Turkish agreement, a plant was opened in Murted for assembly of the F-16 tactical fighter, and one in Eskisehir for the engine. In its initial stages of implementation, the project calls for assembly of completed sets of units/blocks delivered from the United States. Production will then be assimilated locally. Production of the first aircraft began in 1987. UH-1H helicopter assembly and overhaul of helicopters in the Turkish Army inventory are accomplished at a plant in Ankara.

The production capacity of the tank armor industry enables overhaul and modernization of tanks and other armored equipment purchased abroad. Spare parts are also produced in limited quantities. The main enterprises are located in Arifiye, Kayseri and Ankara. Repair facilities are in Corlu, Adapazari, Erzurum and other cities. Technical cooperation with West Germany plays a great role in the development of this branch of the defense industry. Specifically, West German assistance will help set up assembly of Leopard tanks and complete plant construction of a facility to produce military vehicles and their engines.

Plant production of small arms, machine guns, 81-mm and 120-mm mortars, and the ammunition for these weapons has also been set up. Some ammunition is exported. Production of 105-mm tank cannon was begun in 1985. The major plants for these production efforts are located in Kirikkale, Ankara and Istanbul.

Military radios are produced at a plant in Ankara. Construction of an enterprise is underway, with technical assistance from Great Britain, to manufacture radar systems. A plant has also been proposed for assembly of the Rapier air defense missile system and production of certain of its components. TOW anti-tank guided missile production was set up in 1986 with U.S. assistance. Negotiations are underway with French and West German corporations on joint production of the Roland air defense missile system.

Ships and vessels of all classes found in the Turkish fleet are repaired and overhauled in Turkish shipbuilding yards. Destroyers, diesel submarine bodies, tank landing craft and auxiliary ships are built there as well. Their intricate units and assemblies, modern radioelectronic equipment and armament are purchased abroad. The main naval shipyards are located at Golcuk and Taskizak (Istanbul). Construction of West German-design "209" submarines and MEKO 200 guided missile frigates continues at Golcuk. Smaller ASW ships, escort ships and guided missile launches are under construction at Taskizak.

Western experts believe that Turkey's defense industry is undergoing a period of intensive development and basic restructuring. If the above-mentioned programs are completed, it will basically be able to satisfy armed forces requirements for weapons and combat equipment by the end of the century.

Transportation. Development of Turkey's transportation network has been affected by its physical geography, historical development and economic requirements. Mountain ridges make it difficult to tie in the coastal areas with the central regions. Only two Black Sea ports (Zonguldak and Samsun) and two Mediterranean ports (Mersin and Iskenderun) are connected by rail with the interior regions. There are five major highways for vehicular traffic which traverse the country longitudinally. The best developed road network is in the western part of the country and in the areas adjoining the Black Sea straits. In mountainous eastern Anatolia, travel north to south is very difficult; east-west travel is accomplished along river valleys, cutting through passes.

The most important mountain passes through which roads and railways run are Zonguldak (along the Enice River valley, length—100 km, width—0.5 - 5 km but 15-20 meters at some narrow points); Kars-Erzincan-Sivas (along the valleys of the Kars, Karasu, Efrat and Kizil-Irmak rivers, length—about 600 km, width—0.1 - 25 km with narrow sections of 20-50 meters); Samsun (along the valleys of the Murat, Tersakan and Yesil-Irmak rivers, length—95 km, width—200-400 meters); and Kiliki Gates (along the Cakit River valley, length—70 km, width—0.4 - 2 km with narrow sections of 10-20 meters). Only roads have been built through the Trabzon Pass (along the valleys of the Harsit, Corok and other rivers, length—300 km, width—0.1 - 0.6 km with narrow sections of 15 meters) and Corok Pass (along the Corok River valley, length—250 km, width—0.1 - 0.8 km with narrow sections of 10 meters and wide sections of 10 km). In addition, the Kelkit and Karakoc-Mus-Elyazig passages adjoin the border of the Soviet Union.

There are highways across the important Zigana passes (eastern Pontic mountains, height above sea level—2025 m) and Kop (Armenian highlands, 2390 m). A railway extends across Saganluk as well. The vehicular passes are open from March-April through October, the railway—from May through October.

Motor vehicle transportation plays the leading role in Turkey with respect to volume of goods and people transported (up to two-thirds). There are about 1.5 million vehicles in the country (more than half are cars). The roads are main transportation lines which form a network whose total length amounts to 232,000 km, including almost 61,000 km of hard-surface roads. Highways connect all the important administrative-political centers, industrial centers and seaports. But there are many small populated areas lying off the main road network which, during times of precipitation, find themselves cut off from the outside world. Snow drifts are common during the wintertime in the mountainous regions and passes, and can cause transportation to come to a complete stop.

Usually the width of the passable portion of roads is 4-10 meters for roadways which are 5-12 meters in width. Western Anatolia has modern motor highways. There are many artificial structures on the roadways: bridges (more than 3000), tunnels (over 50), viaducts, snow protection passageways and supporting walls. Sharp turns, ascents and drops are typical. In 1973 a vehicular steel bridge was built across the Bosphorus (length—2789 m, width—26 m), resulting in a significant increase in freight traffic from Europe across Turkey to the countries of the Middle East. Another bridge is now under construction several kilometers from this one.

Maritime transport plays an important role in the life of this country, washed by seas on three sides. It holds second place with respect to volume of freight transported in-country and plays a significant role in foreign trade, although about 50 percent of the foreign trade shipping is accomplished by ships flying the flags of other countries. Military experts of the Western countries assign maritime transport an important role in moving troops and military cargo from the countries of the North Atlantic bloc.

Turkey had 825 ships in mid-1986 (gross capacity of each—100 reg. tons and more; total—more than 3.4 million reg. tons). According to this index, Turkey occupies 25th place in the world (35th place in 1981).

More than 50 ports have been built along Turkey's coast, of which 15 are used for foreign trade shipping. In terms of freight turnover, the most important of these are Istanbul, Mersin, Iskenderun, Izmir, Eregli, Zonguldak and Izmit (average annual freight turnover for each port exceeds 1.5 million tons).

Railroad transportation occupies third place with respect to shipment volume. Its share of cargo transport has somewhat increased in recent years. In 1980 it comprised 9 percent, in 1985 had risen to 13, and by 1990, according to Turkish economists, should exceed 18 percent. The country has 8200 km of railroad, of which about 300 km is adapted to electric traction. Most of this is single-track with a gauge-width of 1435 mm. At the beginning of 1986, Turkey had almost 600 diesel engines, 300 steam engines, 25 electric locomotives, 23,000 freight cars and about 1100 passenger cars. By 1989 the number of diesel engines is expected to reach 745; number of steam engines should drop to 240.

For the most part, the railroads pass through heavily broken and mountainous terrain. The track path profile is intricate and has many small-radius (about 250 m) curves. More than 25,000 bridges (totalling 75 km in length), almost 700 tunnels (170 km) and other structures have been built on them. A ferry crossing serviced by two ferries has been built over the segment Van-Tatvan, a 96-km stretch across Lake Van. Each ferry completes two-three trips per day. Each deck can hold a locomotive and 8-10 two-axle cars.

The major railroad junctions are at Istanbul, Balikesir, Eskisehir, Izmir, Ankara, Malatya, Sivas and other cities.

In 1982 a program was adopted for modernization of the railroads prior to the end of the decade, in accordance with which 4200 km of railway would be rebuilt, train speeds along the main lines increased, and the minimum curve radius increased to 900 m. The government approved research efforts to be conducted by Turkish and American firms on prospects for constructing an eight-kilometer dual-track railroad tunnel under the Bosphorus in the Istanbul area.

Air transportation in the country has undergone substantial development. Turkey has more than 100 airfields with hard-surface and dirt runways. The most important airports are located in Istanbul (Yesilkoy), Ankara (Esenboga) and Izmir (Cigli). The first two can accommodate any type of modern aircraft. The civil aviation fleet numbers 245 aircraft. Internal air routes and several international ones are flown by the Turkish National Airlines.

Turkey has more than 4000 km of pipeline overall (for pumping oil and petroleum products). The base of the entire network is the main NATO pipeline consisting of western and eastern networks, each about 1000 km in length. In addition, two pipelines belong to the Turkish oil company. A variety of oil and petroleum products can be pumped sequentially through the NATO main pipeline (emplaced in the soil at a depth of 1-2 meters) to supply combined NATO air forces and main ground force units with fuel. The western pipeline network includes the main pipeline Antalya-Kutakya-Cukurhisar-Izmit-Istanbul-Catalca, and two of its offshoots (Cukurhisar-Karacabey-Bandirma, and Karacabey-Balikesir). The eastern network is comprised of Iskenderun-Osmaniye-Malatya-Erzurum-Horasan (and a branch, Malatya-Diyarbakir-Batman). More than 30 POL storage facilities, with total rated volume of about 500,000 cubic meters, have been constructed along the pipeline.

Among the measures taken by Turkey's military-political leadership in accordance with its own and NATO's plans to develop and improve the military infrastructure, a

great amount of attention is devoted to developing a network of airfields and basing for naval forces. More than 40 airfields have runways suitable for accommodating all types of tactical aviation aircraft. These are evenly dispersed over the country's territory, but at somewhat greater density in western and central Anatolia. In order to enhance the survivability of aircraft at these airfields, arched shelters are being constructed capable of protecting an aircraft from air-ground missile strikes, and from the shock-wave and fragmentation effects of air-dropped bombs up to 250 kg in mass which explode in the immediate vicinity. The shelters are being camouflaged.

The main Turkish air bases are Eskisehir, Murted, Bandirma, Balikesir, Diyarbakir, Merzifon and Erhac. There are also two training air bases at Konya and Cigli. An American air base is located ai Incirlik, in the southern part of the country, where U.S. Air Force tactical aircraft are always on alert status. During periods of international tension or during the conduct of Turkish Air Force exercises, 19 airfields are earmarked for use by NATO combined air forces. In addition to the air bases mentioned above, these include airfields at Akhisar, Antalya, Batman, Yenisehir, Sivas, Sivrihisar, Topel, Erzurum and Erkilet.

Naval forces are stationed at five naval bases (Golcuk, Eregli, Istanbul, Izmir and Iskenderun) and eight basing stations. During peacetime, the majority of naval ships are stationed at the main naval base Golcuk. The others are used when conducting combat patrols and during exercises. Subordinate to the main naval base command (Golcuk) are repair and overhaul facilities, shops, a supply center, shipbuilding yard, and warehouses for artillery ammunition, mines and torpedoes.

Turkey's importance to the militaristic plans of the United States and the North Atlantic bloc has expanded even more in recent years. The Pentagon sees its territory—NATO's southern flank—not only as a springboard for conducting combat operations against the Soviet Union and the socialist countries of the Balkan Peninsula, but also as a trans-shipping base when moving "rapid deployment forces" to the Near and Middle East. Only the United States has been extended the right to use more than 60 bases and facilities on Turkish territory (for detailed information on U.S. and NATO facilities in Turkey, see ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, 1987, No 3, pp 61-66). Thus, the headquarters of the Joint U.S. Military Mission located in Ankara coordinates activities concerning the implementation of agreements between Turkey and the United States on military assistance, and an air group headquarters is tasked with providing logistics and maintenance support to U.S. Air Force facilities in Turkey.

Turkey's senior NATO bloc partner has also set up in the country such military facilities as a station for monitoring the activity of the Soviet Armed Forces and ICBM launches (at Pirinclik, 25 km west of Diyarbakir), radio and electronic reconnaissance centers (in the Sinop area and Anadolukvagi, Bosphorus Straits), a seismic reconnaissance station which collects information on nuclear tests (at Golbasi, a suburb of southwest Ankara), a LORAN-S radio-navigation station (at Kargaburun, a populated area on the northern coast of the Sea of Marmara), communications centers and stations (near the cities of Izmir, Ankara, Adana, Sinop, Samsun, Malatya, Diyarbakir, Incirlik, Corlu, Cakmakli, Erzurum, and others), POL storage sites (at the ports of Iskenderun, Yumurtalik and Izmir).

Western publications give indications that the air bases at Balikesir, Incirlik, Murted, Topel, Erzurum, Erhac, Eskisehir, the Cakmakli area and others contain warehouses and storage facilities for nuclear ammunition where over 500 nuclear rounds are housed.

The total number of American servicemen permanently stationed in Turkey is about 5000.

According to foreign press reports, Turkey also has military bases and facilities to be used in the interests of the NATO bloc, about 40 in all. The most important of these include the headquarters of combined NATO ground forces in the southeast portion of the Southern European theater and 6th Allied Tactical Air Force headquarters (both in Izmir), the above-mentioned air bases, Turkish air defense radar stations which are part of NATO's joint automated air defense system ("Neige"), radioelectronic equipment for processing reconnaissance data and long-range radar detection (AWACS) communications systems (deployed in Konya), centers for tropospheric, radio-relay and satellite communications (Izmir, Ankara and other locations), military warehouses located mainly in eastern Thrace, the region of the Black Sea straits, and areas adjacent to Turkey's border with the USSR.

An active NATO member nation fulfilling its responsibilities to the bloc, Turkey has greater numerical strength in its regular armed forces (over 654,000 individuals) than any other European NATO country (for details concerning Turkey's armed forces, see ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, 1986, No 12, pp 11-18). The country's involvement in aggressive, broad-scale military preparations is directed against the socialist nations and the countries of the Near and Middle East.

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Increased F-16 Fighter Deliveries
18010301n Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 1, Jan 88 (signed to press 7 Jan 88 p 93

[Article by Colonel L. Monin: "Increased F-16 Fighter Deliveries"]

[Text] The F-16 tactical fighter "Fighting Falcon" is widely propagated in the military aviation of the capitalist countries. It is built by the American firm General Dynamics in several variants. Additionally, joint series production of the aircraft under U.S. license has been set up by aviation enterprises of Belgium and the Netherlands, with the involvement of more than 30 firms of other European countries. The aircraft they have built are delivered to the air forces of Belgium, the Netherlands, Denmark and Norway. Assembly of its first F-16 fighters has begun in Turkey.

As of mid-1987, according to Western press reports, 1774 F-16 aircraft out of 2975 ordered have been delivered to the air forces of the United States, its NATO partners mentioned above and a number of other countries as well.

General Dynamics representatives believe that, taking into account preliminary understandings with customers and market conditions, total orders for this aircraft over the long term will come to at least 4000. The lion's share of this increase will fall to the U.S. Air Force, which intends to order another 800 F-16's in their latest modification, i.e., the F-16C and D.

According to Western press reports, at the same time that production of already available versions of the aircraft is in progress, efforts are underway to develop new, more sophisticated variants capable of meeting the ever increasing requirements being made of this class of aircraft.

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Puma Multi-Purpose Armored Vehicle
18010301o Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 1, Jan 88 (signed to press 7 Jan 88) pp 93-94

[Article by Colonel Ye. Viktorov: "Puma Multi-Purpose Armored Vehicle"]

[Text] The West German firms Krauss-Matthew and Diehl have built the initial version of an experimental, multi-purpose, tracked, light armored vehicle "Puma," using construction components of other models, to include carriage units/assemblies and transmissions of the Leopard-1 and -2 tanks. Experts from these firms believe that such an approach will substantially reduce production and operation expenditures and provide a high degree of reliability and maintainability. The vehicle is outfitted with filter ventilation system, automatic fire-fighting equipment and hydraulic mechanism for tightening the tracks.

The mass of this initial Puma is 17 tons. The body is manufactured of steel armor plate. Its frontal portion is designed to offer protection from 20-mm projectiles, its sides—from heavy caliber ammunition. It has a maximum speed of 65 km/hr and a cruising range of 650 km when filled with 500 liters of fuel. The engine is a 440-hp diesel engine.

Development of a family of vehicles is envisioned based on the Puma. Testing is already underway on a 120-mm self-propelled mortar. In addition, the following variants are planned: self-propelled anti-tank cannon (60-, 90- and 100-mm guns are under consideration); combat reconnaissance vehicle; armored personnel carrier for 12-14 personnel; infantry fighting vehicle with automatic cannon; command vehicle; self-propelled anti-tank missile system with missiles of the TOW, HAWK or Milan variety (combat load up to 12 missiles); self-propelled 30-mm twin-barreled anti-aircraft machine gun, with modern fire control system, radar and infrared sight (combat load—800 rounds); armored maintenance and recovery vehicle; minelaying apparatus with six clusters, each containing 100 AT-2 anti-tank mines, capable of laying a minefield 1500 x 60 meters at density 0.4 in 10 minutes.

All the above-mentioned vehicles are expected to undergo testing and evaluation as prospective candidates for procurement by the Bundeswehr.

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Articles Not Translated in ZARUBEZHNOYE VOYENNOYE OBOZRENIYE No 1, Jan 88
18010301p Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 1, Jan 88 (signed to press 7 Jan 88)

[Text] Moral-Psychological Training for Bundeswehr Personnel (Colonel P. Moskvin) (pp 12-19)

New Director General for the Japan Defense Agency (Colonel V. Rodin) (p 20)

Training of Officers in Japan's Ground Forces (Colonel V. Kostin) (pp 27-29)

The Individual Mobilization Augmentee Program in the U.S. Army (Lieutenant Colonel I. Aleksandrov) (p 38)

Aircraft Camouflage (Colonel L. Konstantinov) (pp 47-49)

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